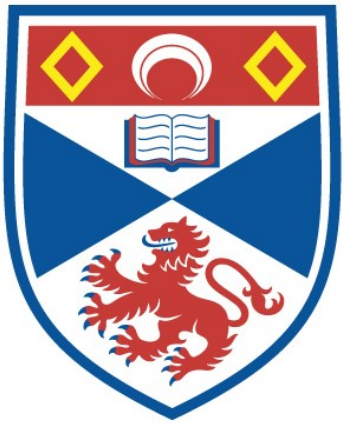
COPING STRATEGIES AND CAUSAL ATTRIBUTIONS FOLLOWING MYOCARDIAL INFARCTION : A LONGITUDINAL STUDY

Hafrun Gudmundsdottir

A Thesis Submitted for the Degree of PhD
at the
University of St Andrews



1996

COPING STRATEGIES AND CAUSAL ATTRIBUTIONS FOLLOWING MYOCARDIAL INFARCTION: A LONGITUDINAL STUDY

Hafrun Gudmundsdottir

Thesis submitted for the degree of Doctor of Philosophy
June 1995

Declarations:

(i) I, Hafrun Gudmundsdottir, hereby certify that this thesis, which is approximately 90.000 words in length, has been written by me, that it is the record of work carried out by me and that it has not been submitted in any previous application for a higher degree.

date 7/8/95 signature of candidate

(ii) I was admitted as a research student in October, 1991 and as a candidate for the degree of Doctor of Philosophy in October, 1991; the higher study for which this is a record was carried out in the University of St. Andrews between 1991 and 1995.

date 7/8/95 signature of candidate

(iii) I hereby certify that the candidate has fulfilled the conditions of the Resolution and Regulations appropriate for the degree of Doctor of Philosophy in the University of St. Andrews and that the candidate is qualified to submit this thesis for that degree.

data.....signature of supervisor.....

In submitting this thesis to the University of St. Andrews I understand that I am giving permission for it to be made available for use in accordance with the regulations of the University Library for the time being in force, subject to any copyright vested in the work not being affected thereby. I also understand that the title and abstract will be published, and that a copy of the work may be made and supplied to any bona fide library or research worker.

date 7/8/95 signature of candidate

Abstract

Coping Strategies and Causal Attributions Following Myocardial Infarction: A Longitudinal Study.

Coping strategies and causal attributions have been shown to be related to recovery and adjustment following illness. Certain coping strategies and causal attributions, such as avoidant coping and other blame have been found to be related to higher levels of distress while others, like behavioural self blame and attention coping have been shown to be related to lower distress. There have however, been few longitudinal studies of the process. The study described here examined coping strategies, causal attributions and levels of distress over a period of 1 year in 91 patients following a first myocardial infarction (MI). Coping strategies (measured by the COPE), causal attributions (measured by open ended questions and a check-list) and distress (measured by the HAD a measure of anxiety and depression with minimal somatic symptoms), were measured within 2 weeks of discharge and at 2, 6 and 12 months post MI. The main findings of the study showed that both coping strategies and causal attributions changed over time. Patients were most likely to use ***attention coping*** strategies early following the illness onset but more ***avoidant*** and ***religious coping*** later on. Patients made fewer attributions as time passed and the most commonly reported causal attributions were ***stress*** and ***smoking***. Results further revealed that both coping strategies and causal attributions were either concurrently related to and/or predictive of levels of distress. ***Avoidant coping*** was related to higher distress at all assessment times. Furthermore, both ***characterological self blame*** and ***other blame*** were found to be concurrently related to higher distress, with characterological self blame also being predictive of subsequent higher distress. These findings have implications for care and rehabilitation of cardiac patients as they imply that certain causal attributions and coping strategies might be problematic as regards post MI distress. This points towards the importance of examining and if necessary, altering certain causal attributions and coping strategies in order for the patient to gain the best possible recovery.

I dedicate this thesis to the memory of two people whom I would have liked to have shared so many more years with

To my grandfather (Solvi) and to Joan.
Til afa og Joan.

May your memories live and continue to bring happiness, wisdom and joy as you both did while you were among us. Thank you both for being you.

This thesis was supported by a grant from the **British Heart Foundation** and by the **British Overseas Research Student Award.**

Acknowledgements:

Many, many thanks to all the patients and their partners who took part in the study and put up with answering hundreds of questions, without you this thesis would not exist. Thanks. Thank you to my dear friend and colleague Joan, who collected all the data with me to make this thesis a possibility, but who sadly is no longer with us to see how it all worked out. Thank you to the British Heart Foundation for providing the research grant and to the British Overseas Research Student Award for their part in paying my fees. Thank you to my supervisors, Marie and Derek Johnston, thanks for supervising the thesis and for all your support, both intellectually and emotionally. I have learnt a great deal from you. To my colleagues and friends at St. Andrews University, Wendy, Val, Julie, Jean, Sheena and Beth, thank you all for your support over the years, you were great! Special thanks to Jean and her mother, Mrs. Taylor, for your hospitality the many days I dined and stayed in your home, also special thanks to Wendy for your help in organising things across the Atlantic. Last but not at all least, for all your patience, support and all the help you gave me with the computer work, thank you to my husband, George.

Content.

Introduction.

The scope and concern of this research was to examine how patients **coped** with a first myocardial infarction (MI), what they believed caused it **(causal attributions)** and how these factors interacted with each other and related to and predicted levels of **distress**.

Coping has been shown to be a key concept in adjustment and recovery from illness, such as MI. Numerous studies have found that different ways of coping are related to how patients adjust to illness, in particular how distressed they are, anxious and depressed (Jahanshahi, 1991, Christman et al. 1988). For example, one form of avoidant coping which has been named *wishful thinking* including thoughts and dreams of what might have been and self-pitying longing for better times, has continuously been related to poor adjustment and higher levels of distress (Felton & Revenson 1984; Revenson & Felton 1989; Lazarus, 1993a). Other forms of coping have on the other hand been related to less distress such as *information seeking* and *acceptance* (Felton & Revenson, 1984; Carver et al. 1993).

Research studies have also found that patients' causal attributions are related to adjustment and recovery from illness. Blaming others for one's illness has repeatedly been related to poorer adjustment and higher distress, whereas self-blame has in most cases been related to less distress and better adjustment (Tennen & Affleck, 1990).

As will become evident in the following chapters the literature in this field has highlighted the importance of both coping strategies and causal attributions in adjustment and recovery from illness, however it is flawed with numerous limitations. For example, there is a lack of prospective studies, much more is known about how coping influences distress at one point in time than is known about how it influences distress prospectively. This applies equally to causal attribution research. There is also a need for better organisation of coping responses i.e., is coping only one dimension or are there many different dimensions of coping. Furthermore, there is a need for assessment of consistency and inconsistencies in the way people

cope both over time and across different stressful situations which might enable researchers to recognise specific ways of coping with an illness such as MI (Carver, et al. 1993; Lazarus, 1993b).

The present study aimed to address and examine the above points and others both in relation to coping strategies and causal attributions in a sample of patients following a first MI.

In order to give the reader some background information on both medical and psychological aspects of an MI the thesis begins (chapter 1), by explaining the seriousness of the illness. This includes both the physiology of an MI i.e., what happens to the body when a person suffers an MI (physiological aetiology) but more importantly what the patient has to face and cope with and what there is to make attributions for. This part will also briefly explain the management of an MI, prospects of recovery, long-term complications and prevalence of the disease. This then leads up to one of the main scopes and concerns of the present research which begins in chapter 2 by a description of coping.

Chapter 2 includes a discussion of the history and theories of coping. It gives a general definition of coping and explains what kind of behaviours and cognitions are considered as coping. Two main approaches in describing coping are discussed and the distinction into coping styles and coping strategies illustrated. The main coping assessment and measurement techniques are described and the way researchers have attempted to define successful and unsuccessful coping explained. Chapter 2 also reviews numerous studies on how patients cope with chronic illness and includes a specific section on coping with MI. Finally it concludes with a general summary of the studies reviewed.

Chapter 3 deals with causal attributions, they are described and summarised in the same way as coping was explained in the previous chapter. Studies on causal attributions following illness are reviewed, with a special section on self-blame and adjustment and a section of studies on attributions following MI.

Chapter 4 explains the aim and hypothesis of the present study. It also gives an outline of the study design, including a description of the study participants, and the study procedure.

The study measures use and development are outlined in chapter 5. This chapter also includes a description of data coding, data analysis and screening.

Univariate analysis and results are described in chapter 6, which is divided into smaller parts with discussion of findings in between.

Bivariate and multivariate analysis and results are presented in chapter 7 including a summary of findings, concluding with a general summary of all results.

The last section, chapter 8 gives a summary and discussion of findings including ideas about why things happened the way they did, what was surprising about the results and how the measures formed. Other points are also raised, including theoretical implications, implications for MI intervention and rehabilitation and implications for future research.

CHAPTER 1

Medical and Psychological Aspects of Myocardial Infarction.

What happens when a person suffers a myocardial infarction (MI)? What is there to cope with and make attributions for?

In order to answer these questions it is important to understand some of the physiological aspects of an MI, what happens to the body when a person suffers an MI and why it is meaningful to carry out research into the recovery process following MI.

One of the first things that comes to mind when thinking of an MI and one of the things which makes it meaningful to do research in this field, is the prevalence of the disease. It is an illness which in western countries is responsible for between third and a half of all deaths and a half to three-quarters of all cardiac deaths. MI is the main cause of death in men and the second biggest killer in women (Jowett & Thompson, 1989). In Britain nearly a third of all male and female deaths are caused by myocardial infarction. Although, improved treatment in recent years has managed to reduce death rates and the prospects of physical recovery from MI are now reasonably good, the consequences of this disease extend to many areas. This not only costs society an enormous amount of money every year, both in lost production and treatment costs, it is also widely acknowledged that an MI can produce immediate and long term effects which are both physical and psychological in nature and affect both the patient and their families (Cay, 1982; Coyne et al, 1991; Norman, 1991). Before discussing these factors further, lets first consider what myocardial infarction actually is.

Myocardial infarction (MI) refers to the process by which myocardial tissue is destroyed in regions of the heart that are deprived of their blood supply after closure of the coronary artery, or one of its branches, either by thrombus or through obstruction of the vessel lumen by atherscleros is (Jowett & Thompson, 1989).

Among risk factors for MI are, genetic factors, high blood pressure, high levels of cholesterol, smoking, diabetes, lack of physical activity, obesity and stress. Smoking is thought to be the most important risk factor for both first and subsequent infarctions (Dauber, 1980). MI and sudden death occur two to four times more frequently in smokers than in non-smokers. Overall the risk of death from coronary heart disease is twice that of non-smokers (Friedman et al, 1979).

The first symptom of an MI is usually chest pain. Pain may be felt in the arms or the back and is frequently attributed to indigestion. The physical appearance and clinical findings in patients suffering from MI are extremely variable and alter with time and the presence of any coexistent complications (Jowett & Thompson, 1989). The first presentation of MI may be sudden death. Up to one-half of all deaths occur in the first hour following the onset of symptoms, the care of patients in the first hour is therefore of vital importance. Improved care and treatment in recent years has managed to cause a decrease in sudden death following an MI (Goldman & Cook, 1984, Faller, 1990).

Management of MI is initially aimed at relieving the immediate symptoms, with rapid haemodynamic stabilisation, followed by a prompt treatment of any ensuing complications. Further treatment includes for example, drug treatment of hypertension, dietary or drug treatment of high serum cholesterol and advice on stopping smoking, weight reduction and increased physical activity. Rehabilitation after MI aims at restoring the patient to an optimum level of recovery, including physical, emotional, social, economic and vocational. It also aims at preventing progression of heart disease. This kind of rehabilitation requires the use of wide range of skills from different health professionals including nurse, doctor, physiotherapist, occupational therapist, clinical psychologist, dietician and social worker. The rehabilitation process should begin when the patient enters the hospital and continue after discharge, but this is rarely the case. Cardiac rehabilitation programs are still relatively few and many patients leave hospital unaware that they have even had a heart attack, let alone what this means and what to do about it once they get home (Jowett & Thompson, 1989).

As mentioned earlier, recovery from MI is more than just a medical problem, complex and demanding social, vocational and psychological adjustments are also often required of patients and their families (Coyne & Smith, 1991). It is evident that having an MI is a very stressful experience which attacks both the physical and emotional integrity of the patient. The psychological impact can be as, and sometimes more, upsetting than the physical effects (Ben-Sira & Eliezer, 1990, Bennett, 1992). Psychological and social variables have in fact been found to have utility in the prediction of post-infarction adjustment (Mayou, et al. 1978). This leads back to the original questions of this section, i.e. "what might a person who has suffered an MI have to cope with and why is it important to examine how they cope and adjust?"

Myocardial infarction can be regarded as a life event that unexpectedly and dramatically interrupts the person's daily routine. It is a serious chronic illness and something people do not recover from within a week or so and then forget about (Langosch, 1989). In the majority of cases people do not get back to their normal activities until a considerable time has passed, usually 2 to 6 months, even a year in some cases, and others might never regain their previous level of activities. Having an MI may have a number of implications and sometimes disabling effects on the patient's life. The patient may for instance, experience disruption of occupational networks, not be able to drive, become less physically fit, experience pain and emotional upsets and in some cases the illness might require revaluation of long term life plans. In addition the patient has to adjust to taking medication and might also have to face some prohibition and changes regarding things like dietary habits, smoking and alcohol intake. Changes which are often difficult to bring about are required, such as in lifestyle and patterns of family interactions (Krantz & Deckel, 1983; Jowett & Thompson, 1989; Langosch, 1989). These issues show that apart from having to cope with the fact of experiencing a severely life threatening event, as well as having to learn to live with a chronic illness, the patient also needs to cope with a number of other factors.

How the patient reacts, has been found to play a central role in dealing with the stresses of illness. The patient's general reaction, including both thoughts and behaviour, has been shown to influence the effects of MI and

other illnesses and to be related to and affect the illness process (Newman, 1990). This includes effects on levels of ***pain***, ***disability*** (Stewart & Knight, 1991), ***distress*** (Frank et al, 1987; Havik & Maeland, 1988; Stanton & Snider, 1993), ***blood pressure*** (Warrenburgh et al. 1989), ***social activity*** (Holmes & Stevenson, 1990) and ***survival rates*** (Pettingale, 1984; Derogatis, et al. 1979; Levenson et al. 1989; Spiegel et al. 1989). Beliefs in the effects of how the patient reacts on illness adjustment can for example, be seen in many programs which have been set up for people diagnosed with cancer and which deal primarily with psychological care, with emphasis on group support, health education and stress reduction (Lerner & Remen, 1987, Bagenal et al. 1990). In fact, support for the importance of the patient's reactions and ways of coping in cancer has been found in intervention studies aimed to enhance coping skills. Recent longitudinal intervention studies with cancer patients have shown benefits from programs involving social support, health education, stress management and training in coping skills (Fawzy et al. 1990; Cunningham et al. 1993; Grahn, 1993). These studies have shown that training in coping skills along with other interventions enhanced quality of life in most patients (Cunningham et al. 1993), lowered depression and showed significantly more use of active-behavioural and active-cognitive coping than control groups receiving no intervention (Fawzy, et al. 1990).

Patients cope and adjust to life threatening events like MI with considerable variability. Some patients might use denial to avoid thinking about it or having to deal with its consequences, whereas others might accept it right from the beginning and get actively involved in rehabilitation. These different ways of coping can however lead to different adjustment and outcome in a number of areas, in particular in relation to levels of distress (Christman et al., 1988).

Anxiety and depression following an MI are considered among the most formidable problems in cardiac rehabilitation (Hackett & Cassem, 1974; Langosch, 1989). Depression has been described as a universal response to MI which occurs in every patient with symptoms similar to, but less severe, than those of a major clinical depression (Hackett, 1985, Garcia et al., 1994). Most research suggests that depression is associated with poorer post-MI outcomes (Krantz & Deckel, 1983; Frasure-Smith & Prince, 1987), and patient's pre-morbid or trait anxiety has also emerged as

a significant predictor of poor adjustment (Mayou, et al. 1978, Cay et al., 1973). Considering the established link between coping strategies and levels of distress (Christman, et al. 1988), and the link between distress and poorer post MI outcomes, it could be of vital importance to examine further how coping influences these factors in order to aid the patient's recovery process.

The form of coping used by the patient, could however be influenced by other factors, such as what they believed caused the illness. The patient is likely to be wondering why it happened and why it happened to him/her, not someone else. Research has revealed that the majority of people with life-threatening illness or injury make and report ideas about what they think has caused their condition (Taylor et al., 1984; Janoff-Bulman & Wortman, 1977; Schulz & Decker, 1985; Affleck et al., 1987). What a patient thinks might have caused their illness has also been found to be related to illness adjustment, in particular to distress (Tennen & Affleck, 1990). In this case, patients who engage in blaming others for the MI have been found to suffer higher levels of distress (Tennen & Affleck, 1990) and even higher incidence of reinfarctions (Affleck et al. 1987), whereas those who blame their own behaviour have been found to show less distress (Janoff-Bulman & Wortman, 1977), and more lifestyle changes which could aid recovery (Naea de Valle & Norman, 1992). Furthermore, patients who blame their own character or personality have been found to show worse psychological adjustment which could lead to worse recovery (Timko & Janoff-Bulman, 1985).

It has also been suggested (Norman, 1991), that patients' causal attributions might have an effect on their willingness to change their behaviour, which for MI patients is often necessary. A patient who attributes the MI for example, to fate, chance or the will of God, might not see any reason to stop smoking or to change their eating habits, which in return could prolong their recovery or result in another infarct. In this manner patients' causal attributions might free them from taking responsibility for causes of the illness which might involve lifestyle changes that could help the recovery process or prevent a reoccurrence of the illness (Linn et al. 1982). On the other hand, the kind of causal attributions patients hold could also result in patients blaming themselves unnecessarily for illnesses which they have no control over, which could

then result in worse emotional reactions and recovery (Taylor, 1983). All of these points do however, need further examination.

As has been argued here and previous research findings have suggested, it is evident that having an MI is a traumatic life event requiring considerable long term adjustment. Furthermore, psychological factors, including both patients' coping strategies and causal attributions, have clearly been shown to have an effect on recovery from MI. However, research in this field has as yet not been able to study the full scope and depth of problems that arise, in particular how they might change over time, and most rehabilitation programs do not include any psychological counselling (Krantz & Deckel, 1983; Jowett & Thompson, 1989). Health psychologists therefore have an important role to play, both in examining and explaining how these factors interact, change over time and how they could be dealt with in order to aid and improve the patient's recovery. The study this thesis is based on and will be described on the pages that follow, aimed to do just that, i.e., to provide further understanding of how patients cope with a first MI, what kind of attributions they make, how distressed they are and how these factors interact with one another and more importantly, considering the long term effects and the chronic nature of the illness, how these factors change over time.

Chapter 2 presents a literature review of coping, organised in the following way:

2.1. Coping.

Sub-headings:

Is coping related to and predictive of adjustment to rheumatoid arthritis?
Variability and stability in coping with rheumatoid arthritis over time.
Is coping related to and predictive of pain and disability in patients with rheumatoid arthritis?
Coping and adjustment to cancer.
Variability and stability in coping with cancer.
Is coping related to and predictive of distress in patients with cancer?
Is coping concurrently related to levels of distress?
Is coping related to adjustment to chronic low back pain?
Attention versus avoidant coping and adjustment to illness?

CHAPTER 2.

Coping Review.

2.1 Coping.

2.1.1. Definition of coping.

The concept of coping has come to play a central role in health psychologists' attempts to make sense of peoples different responses to illness as well as outcomes in the health and disease process. The first task confronting any investigator who wishes to examine persons' attempts to cope with chronic disease is to provide a definition of coping. In this context the most commonly used definition of coping is that put forward by Lazarus and Folkman (1984), where coping is defined as:

"***cognitive and behavioural efforts to manage specific external and/or internal demands. Coping is persons efforts to manage demands, whether or not the efforts are successful. No a priori assumptions are made about what is good or bad coping***" (Lazarus & Folkman, 1984).

Coping is commonly associated with positive activities, but in this context it is any effort to manage stressful events including people's behaviours that seem patently to be maladaptive, such as smoking cigarettes and drinking alcohol to excess. In other words, in its broadest sense any action and/or cognition which takes place in relation to a stressful event, such as a disease or illness, could be considered as an attempt to cope (Murphy, 1985).

Although the concept of coping defined in this form dates back to the 1960s and 1970s, coping has a much longer history. Interests in coping can be traced back to the psychoanalytic theory of defences, where person's defensive style was looked upon as a way of managing threat. Driven from this outlook came the so called hierarchical approach to coping. Still with emphasis on defences this approach regarded some defences as better or healthier than others (for a review see Haan, 1969). This view emphasised coping as an unchangeable trait or style (see below). However, in the late 1970s a new development in both coping

theory and research occurred. Now coping was looked upon as a changeable process rather than a trait or a style. These two main approaches in describing coping still remain today, although describing coping as a process has gained wider research support (Lazarus, 1993a). Let's take a closer look at what these approaches mean and the difference between them.

2.1.2. Coping as a trait or style and coping as a process.

The trait oriented approach assumes that coping is primarily a property of the person and variations in the stressful situation are of little importance. This approach emphasises stability in coping rather than change. In the process oriented approach the context is critical because coping is assessed as a response to the psychological and environmental demands of specific stressful encounters. This emphasis on the context means that particular person and situation variables together shape coping efforts (Folkman et al, 1986). In taking the trait view of coping there is little that can be done, even in theory, to aid or to prepare a therapeutic intervention, people simply have different traits and some traits are better suited to manage disease and illness. People who are confronted with a disease and happen to have the wrong or inappropriate personality are just out of luck. The process oriented view of coping on the other hand, at least gives some hope that people can be trained to respond differently to situations, to make different attributions, or to seek different kinds of information (Singer, 1984). The trait oriented approach has been criticised as assuming a consistency in behaviour which has not been supported in the literature. Research has revealed more information in the direction that coping is not an individual trait or disposition which is stable over time and across different types of stressful situations. Coping seems to be a continuous, transactional process which is modified by experience within and between stressful episodes (Cohen & Lazarus, 1979; Folkman & Lazarus, 1985; McCrae, 1984; Parkes, 1984; Folkman et al., 1986; Aldwin & Revenson, 1987; Bolger, 1990; Aspinwall & Taylor, 1992; Carver et al., 1993).

2.1.3. Coping styles and strategies.

Coping is also divided into coping styles and coping strategies. Coping styles refer to traits and are stable properties of personality but coping strategies are what people do in a particular situation (state) and refer to situation and person, they are specific. An example of a coping style would be a trait like hardiness, some individuals would have a lot of it while others had less. Coping styles, like the concept of hardiness have been examined in relation to outcomes for a variety of stressful experiences and the results have shown their importance in explaining the outcome. Although such stable coping styles are important they do not paint the complete picture of the way people manage. Coping also includes other elements which are referred to as coping strategies and they can change over time and across different stressful conditions (Singer, 1984). Denial for example, is one type of coping strategy, where the individual refuses to believe that the stressor exists or tries to act as though the stressor is not real. While people's coping styles are fixed across time and circumstances coping strategies are changeable, in other words, coping strategies can be referred to as the process of coping. Any particular coping strategy can reduce stress in one situation yet be remarkably maladaptive in another (Cohen & Lazarus, 1979).

2.1.4. Models and theories of coping.

One of the leaders in identifying and examining coping as a process is Richard S. Lazarus. After a series of studies in the early 1960s, on how people protected themselves from threat, Lazarus abandoned the theory of ego-defences as the main way of explaining ways of coping. Instead he shifted towards a general concept of appraisal. Appraisal was viewed as a universal process in which the individual constantly evaluated the significance of what was happening (Lazarus, 1993b). The individual could make sequences of appraisals for example, they could appraise the strength of the event or stressor, their own ability to withstand it, the possible extent of the damage it might cause etc. Furthermore, the appraisal was divided into *primary appraisal* and *secondary appraisal.* Primary appraisal is the process of being aware of the meaning of an event to oneself, it contains judgements about whether the event is irrelevant,

benign-positive or stressful. Appraising an event as irrelevant implies that it has no significance for well-being and a benign-positive appraisal indicates that the event does not exceed the individual's resources and signals only positive consequences. Stressful appraisals include: *harm/loss, threat* or *challenge. Harm/loss* refers to injury or damage already done, *threat* refers to a potential for harm or loss and *challenge* includes an opportunity for mastery, growth or gain. Primary appraisal, whether it be harm/loss, threat or challenge, is shaped by person and situation factors. The most important person factors relevant to primary appraisal are beliefs and commitments. For example, beliefs about control over the outcome can influence primary appraisal, the same is true for commitments as they reveal what is important to and at stake for the person. Furthermore, primary appraisal is also influenced by situational factors, this includes for instance, the nature of the harm or threat, whether or not the event is familiar or novel, how likely it is to occur, when it might occur and how clear or ambiguous the expected outcome is. Secondary appraisal on the other hand, is the evaluation of coping resources and options, it is the process of considering a possible response to the threat and addresses the question "What can I do?" Secondary appraisal becomes critical when there is a primary appraisal of *harm/loss, threat* or *challenge*. In secondary appraisal a number of coping resources are evaluated with respect to the demands of the situation. Appraisal of control is a part of secondary appraisal, control which could have a number of target outcomes including for example, reduction of harmful conditions, to tolerate or reduce negative events, to maintain a positive self-image, to maintain emotional equilibrium and to continue good and satisfying relationships with other people (Folkman, 1984). In this context, coping is viewed as any belief or action which is a result of the appraisal and evaluation process, which enables the individual to carry out the response developed by the secondary appraisal (Singer, 1984). From this theory and other research in this field additional ideas and models of coping have emerged, such as the Self-regulation model of illness put forward by Howard Leventhal et al. (1984). Since this model was used to develop one of the main hypothesis the present research is based on (see below), some details of the model are presented here.

2.1.5. Leventhal's Self-regulation model.

This model includes coping as well as many other elements which are of importance when examining how people respond to illness. However, for the interest of this review only those aspects of the model which directly involve the development and processing of coping strategies will be described.

The model proposes that people's coping reactions are created on a moment to moment basis by a so called *information processing system*. This information processing system blends new information with both inherited and acquired codes or memories and in this manner organises people's experiences and behaviour. The model also assumes that this processing system is divided into *two parallel pathways*. One creates a view or a representation of the illness and it also develops a *coping plan in order to manage the illness threat*. The other is involved in creating an emotional response to the threat and moreover develops a *coping plan to manage these emotions*. As the individual adapts to the situation these two pathways interact. Furthermore, the processing system works in *three stages*. The *first* stage produces the representation, the individual's thoughts, of the event and the emotions that follow it, the *second* develops and completes a *response plan for coping with both the event itself and the emotions* and the *third* stage includes an *appraisal of coping*. This *last* stage determines the *effectiveness of coping* i.e., it examines if the coping responses have moved the individual any closer to achieving the goals which were set by the representation. This appraisal stage feeds back information to the preceding stages and in that way it *can change the coping strategies* and/or how the event has been represented. According to the model a part of people's representation is what they believe caused their illness (their causal attributions) which then could play a part in guiding their ways of coping (Leventhal, et al. 1984, Meyer et al., 1985). It is from this proposal that the present study drives one of its main hypothesis, i.e. that ***causal attributions will predict patients' coping strategies.*** However, bearing in mind that the model also suggests that by appraising the effectiveness of coping the representation can be changed, in that respect coping could influence patients causal attributions as well.

Finally, the model assumes that the processing system is hierarchically organised. It works with both real and hypothetical characteristics of an illness. For example, in all the stages, (i.e. the representation, coping and the appraisal) coping with chest pain includes both real features, the pain itself, and hypothetical features, the idea that one is having an MI. This hierarchical part of the model could however cause either consistency or inconsistency between the reality and the hypothetical level. A patient might for instance be told that they are physically improving as a result of a treatment but at the same time they might feel worse (distressed). The authors suggest that inconsistency which often arises between different coping strategies might be created as a result of these different levels of representation (Leventhal, et al. 1984).

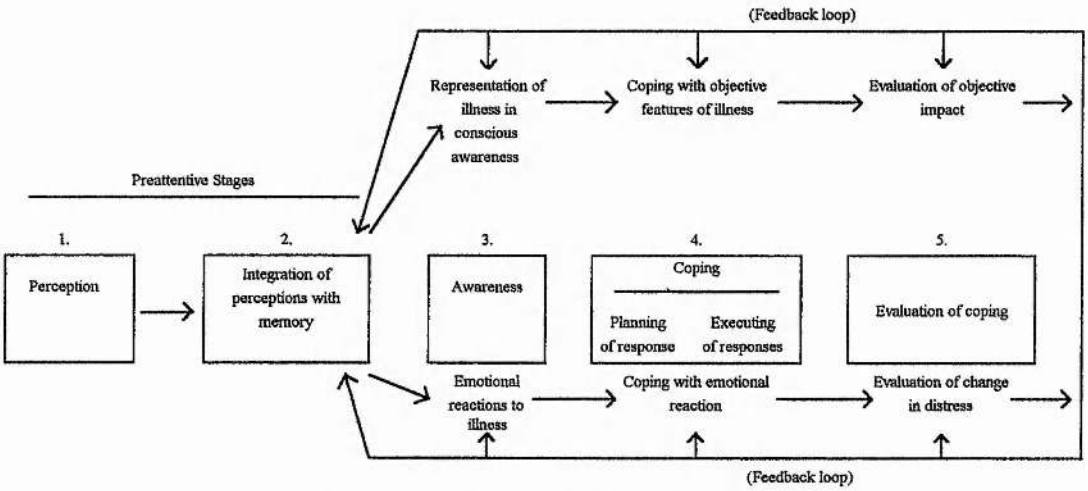


Figure 1. Leventhal's self regulation model. (Copied from Leventhal et al., 1984, page 221).

2.1.6. Classification and dimensions of coping.

One of the aims of the present study was to examine the dimensions of coping, i.e. to assess how and which coping strategies grouped together or if they tended to work in isolation. The main way to examine the dimensions of coping is to examine and consider coping strategies by asking individuals to respond to structured questions on how they would handle stressful situations. The responses are then independently examined against outcome variables or combined in a statistically meaningful way (Newman, 1990; Aldwin & Revenson,1987).

A well known approach in this area is the one proposed by Folkman and Lazarus (1980), which divided strategies into emotion or problem focused coping strategies according to how individuals report they respond to particular stress provoking situation. Problem focused coping includes efforts where the individual is actively doing something constructive about the threat, whereas emotion focused coping involves efforts to manage the emotional consequences of the threat.

Another approach classifies behaviours into avoidant and attention/non avoidant strategies (Suls & Fletcher, 1985). The research literature on coping strategies has a variety of terms in referring to avoidant coping, among these are denial, distraction, repression and suppression. All these strategies have a critical feature in common, they all involve a strategy that focuses attention away from either the source of stress or away from one's psychological/somatic reactions to the stressor. Attention coping, on the other hand is referred to when attention is focused on the source of stress and/or one's psychological/somatic reactions to the stressor, including such strategies as information seeking and direct action (Suls & Fletcher,1985). Overall, there are a number of coping strategies an individual might use in confronting a stressful event, but they tend to be grouped together either in a statistical meaningful way, such as by using factor analysis or as theoretically defined (Newman, 1990).

2.1.7. Coping assessment.

After moving away from looking at coping as an unconscious process which had to be examined and uncovered by a clinician, towards viewing coping as a conscious process, research since the 1970s and 1980s has developed a number of coping instruments which assess a variety of coping dimensions (Parker & Endler, 1992). Assessment of coping relies now mainly on questionnaires or face to face interviews, including both general measures of coping and assessment tools for coping with specific illnesses or other stressful situations. With the instruments which are specific for an illness it is possible to take account of the specific issues that patients have to cope with in that particular illness.

There are a number of different instruments available for assessing how people cope with events in their lives. The particular coping strategies included in each questionnaire and the number of coping dimensions included in each one, can vary across different measures and studies. However, as the following coping literature review will show, a common feature of most of these instruments are the broader categories of coping, such as problem focused coping, emotion focused coping, avoidance, attention, positive appraisal etc.

The most widely used coping assessment scale is the *Ways of Coping Questionnaire* (WCQ) developed by Folkman and Lazarus. This scale was originally called *The Ways of Coping Checklist* (WCC) and developed, using a sample of middle aged people, as a checklist of 68 items, which described a broad variety of both cognitive and behavioural strategies (Folkman & Lazarus, 1980). Twenty four of those 68 items made up a sub-scale of problem focused coping, 40 were emotion focused, and 4 items were not scored. Answers were coded on a "yes" and "no" response scale. Folkman and Lazarus later (1985) revised this scale, either by deleting or rewording unclear items and adding new items, in addition the response format was changed, now using a 4 point Likert scale. This scale was labelled *The Ways of Coping Questionnaire* (WCQ) and included 66 items instead of 68 before. This new scale was administered to 198 undergraduate students on 3 different occasions and their responses then factor analysed. This gave, after deleting items which did not load clearly, a final version of 42 items and 8 scales: *confrontive coping (6 items), distancing (6 items), self-controlling (7 items), seeking social support (6 items), accepting responsibility (4 items), escape-avoidance (8 items), planful problem solving (6 items)* and *positive reappraisal (7 items).* Six of those factors are considered to reflect emotion focused coping, one problem focused coping and the remaining one is a mixture of the other two. This instrument can be used either in the form of an interview or be self-administered (Folkman & Lazarus, 1985; Lazarus, 1993a; also for a review see Cohen, 1987; Parker & Endler, 1992).

The WCQ has been both revised and modified by other researchers and factor analysed on a number of occasions (for a review see Cohen, 1987). One of the studies which set out to examine the WCQ further, was carried out by Vitalino and his colleagues (1985). In a study with 425 medical

students, they factor analysed the WCQ and the results presented 6 factors, of which they created the 5 following interpretable coping scales: *problem focused, seeking social support, self blame* and *two wishful thinking scales.* This has been referred to as the Ways of Coping Questionnaire - Revised.

In their review Parker and Endler (1992), present a comprehensive list of the main criticisms the WCQ has come under. This includes for instance, that researchers using this measure have frequently found different number of factors. This seems to depend on the sample in question or the number of items selected. Other points criticised include test - retest reliabilities for the WCQ, which have not been presented. Furthermore, researchers tend to add or drop coping items on the basis of what hypothesis are being examined and, according to Parker and Endler, this is encouraged by Folkman and Lazarus. Parker and Endler (1992) do however, point out that this is hardly methodologically acceptable when using a standardised instrument. In their conclusion the above authors point out that the various Ways of Coping measures have considerable theoretical value and have been an important contribution to the coping area, both theoretically and empirically. However, they also argue that this coping measure has most likely been used too often considering its methodological value.

Other coping questionnaires, include for instance, a coping inventory developed by Billings and Moos (1981). This instrument was developed by asking 194 families, including both partners, to indicate, using 19 items, how they had reacted to a recent stressful life event. Responses were rated on a yes/no scale. Based on the study findings the authors, using face validity, grouped the responses into 3 different categories of coping, i.e., *active-behavioural coping, avoidance coping* and *active-cognitive coping.* Billings and Moos subsequently (1984) revised this coping measure, this time using a sample of 424 people suffering from depression. This time including 31 items which the subjects were asked to use in order to indicate how they had responded to a recent stressful experience. The response format was now on a 4 point Likert scale rather than a yes and no response. Like before the authors focused on, using item analysis, categorising coping strategies into appraisal-focused coping, problem-focused coping and emotion-focused coping. This resulted in a scale of 28

items which were found to be related to outcome variables including, depression severity, physical symptoms and self confidence.

A number of other coping questionnaires will be mentioned in the following review on coping with chronic illness. Several of these questionnaires have been based on the WCQ while others have been either individually developed or specifically developed for a particular study or a particular disease. This includes measures such as, the Coping Strategies Questionnaire (CSQ) (Rosenstiel & Keefe, 1983), a 64 item self-report measure which requires the respondent to report on how often they use different coping strategies. The CSQ has 8 sub-scales: *diverting attention, reinterpreting pain sensations, coping self statements, ignoring pain sensations, praying and hoping, catastrophizing, increasing activity levels* and *pain behaviours.* In addition the CSQ has two items where the subject rates their ability to control their pain. Other questionnaires are for instance, the Bernese Coping Modes (Heim et al. 1993), Coping Strategies Questionnaire for Sickle Cell Disease, based on The Coping Strategies Questionnaire (Gil, et al. 1992), the Medical Coping Modes Questionnaire (Feifel et al. 1987a), and the Jalowiec Coping Scale (Jalowiec et al. 1984). The Jalowiec Coping Scale includes 40 coping items making up 3 independent factors, one including *confrontive* or *control oriented coping,* another *emotive* or *reactive behaviours* and the third *palliative* or *passive behaviours*.

Other instruments have aimed towards measuring one particular aspect of coping, such as the Hackett - Cassem Denial Scale (Hackett & Cassem, 1974). This measure was developed as a semi-structured interview to assess denial in patients with myocardial infarction. It examines a variety of denial like coping strategies, such as, avoidance, delay in seeking treatment, minimisation and non challenge. Critiques have pointed out that by putting together so many different denial like coping aspects the authors have overextended the meaning of denial (Cohen, 1987). Furthermore, the scale has been criticised for having an unstructured interview schedule which could lead to variability in how information is coded and collected (Cohen, 1987). Nevertheless, the scale has been found to have predictive validity (see coping with MI review).

One of the latest developments based on the Ways of Coping Questionnaire is the COPE scale (Carver, et al. 1989). This coping inventory was, according to the authors, developed mainly for 4 reasons. Firstly, Carver et al. (1989), argued that even though the distinction between emotion focused- and problem focused coping, as the WCQ examines them, was an important one, it did not cover all the coping strategies an individual might use. This Carver and colleagues based on previous research which, using the WCQ, had found that people's responses were not just based on emotion vs. problem focused coping, but on a number of others as well. Secondly, Carver, et. al. argued that pre-existing measures of coping did not manage to gain all the information they thought was of theoretical importance while assessing coping. Thirdly, items in other scales were considered not clear enough. Finally, most existing measures were criticised for being empirically based rather than theoretically. As a result of this the measure Carver et al. developed, i.e., the COPE, covers a broader range of coping strategies than the WCQ and other measures have done. It contains 60 items which then make up 15 different coping scales, 13 based on factor analysis, while 2 were added at a later stage for exploratory reasons. It includes both emotion focused and problem focused coping as well as other strategies, such as "focusing on and venting of emotions", "behavioural disengagement" and "mental disengagement". The COPE is now frequently used within health research (for example see Carver et al. 1993). This instrument was used for the assessment of coping in the present study and will therefore be described in more detail later (see chapter 5). Parker and Endler (1992), in their review of coping measures, point out that although the factor structure of the COPE might need further investigation (for reasons such as: no information on how many items were used for factor analysis to get the coping scales, items were dropped or factors divided and number of factors were based on eigenvalues greater than 1), the COPE's test - retest reliability is well presented and extensive validity information is available which shows that the COPE is a multidimensional measure of coping strategies.

Questionnaires assessing coping strategies have been criticised for methodological weaknesses, including lack of empirical validation for sub-scales, unstable or unsubstantiated factor structure, low internal reliabilities and lack of construct validity (Parker & Endler, 1992; Cohen,

1987). Furthermore, coping check-lists have been criticised for either not including enough coping items or for being too long and including items that are neither relevant nor appropriate for the study sample (Watson & Kendall, 1983, Leventhal & Nerenz 1985). For these reasons it is difficult to judge which scale is best or most appropriate. However, as Cohen (1987) suggests ***"the choice of a coping instrument should depend on the type of situation to be studied, the researcher's goals and conceptual framework, the level of generality desired and the degree to which it taps the dimensions of coping the investigator thinks are most important."*** (Cohen, 1987, page 300). Keeping this in mind and making use of the latest methodologically sounder coping instruments now available, such as the COPE, the researcher should be well equipped to carry out empirical work providing better understanding of the coping process.

2.1.8. Successful vs. unsuccessful coping.

Researchers have attempted to define successful coping by evaluating coping with respect to a variety of outcomes. One way to determine what is successful and unsuccessful coping has been to measure physiological and biochemical functioning. Coping efforts are generally thought to be more successful if they reduce arousal and its indicators, such as heart rate, pulse and skin conductivity (Taylor, 1986).

Many stressors interfere with the conduct of daily life activities, a second criterion of successful coping can therefore be whether and how quickly people can return to their pre-stress activities. Coping may be judged to be successful in relation to what extent people's coping strategies enable them to resume usual activities (Taylor,1986).

Finally, coping is most commonly judged according to its effectiveness in reducing psychological distress. For example, when a person's anxiety or depression is reduced, the coping response is judged to be successful . It is important to keep in mind that coping efforts may be judged as successful according to one criterion but may appear less effective when judged by another. For instance, a coping effort, such as denial, may reduce psychological distress but also interfere with an individual's ability

to take action against the stressful event. Coping is a very complex process which is best assessed according to a number of different criteria, some of these criteria may be affected positively by the coping efforts and others negatively (Newman,1990).

In summary, coping is successful if, within the definition, it reduces demand and the outcomes are evidence of reduced demand.

2.2. Coping with Chronic Illness.

Numerous studies have been carried out in order to determine the effectiveness of different coping strategies on recovery and adjustment to illness. Since the purpose of this thesis was to examine the role of coping strategies focusing on its relationship with causal attributions and psychological distress for a period of 1 year following a chronic illness, the research reviewed here will focus on areas of relevance and interest to this domain. This includes mainly studies showing the relevance of coping in adjustment to illness, in particular in relation to distress. Longitudinal studies on coping are reviewed which show how coping might change over time and predict psychological adjustment and illness outcome. Some cross-sectional studies, showing the relevance of coping are also included. The review is organised by type of illness, starting with rheumatoid arthritis, followed by studies on coping with cancer, spasmodic torticollis, spinal cord injury, chronic headache, chronic low back pain, chronic pain and a final section including studies on coping with MI. Each illness review includes sub-headings depending on the outcome under study. These particular studies were selected for this review as they are the main areas which have been studied focusing on coping with chronic illness and its relation to illness outcome, in particular to levels of distress.

One of the central questions put forward by research in this area is which coping strategies are successful in reducing the impact of the stresses, psychological and others, that follow a disease. As will become evident in this review, a better understanding and knowledge of this issue is essential for developing and designing psychological treatments and interventions.

2.2.1. Coping and adjustment to illness.

Is coping related to and predictive of adjustment to rheumatoid arthritis?

Like MI, *rheumatoid arthritis* (RA) is a chronic illness requiring considerable adjustment, largely because of the pain and disability that follow this kind of disease. Furthermore, individuals with RA have been identified as a medical population at risk for psychological disorder (Revenson & Felton, 1989; Zautra et al., 1992).

A number of studies have examined patterns of coping among patients who have suffered from RA for some time. A longitudinal study, carried out by Felton and Revenson (1984), studied the significance of coping strategies on psychological adjustment in RA and three other chronic illnesses, cancer, hypertension and diabetes. The sample consisted of 151 nonhospitalised patients who were interviewed on 2 occasions, initially just after being contacted and again 7 months later. The two coping strategies included in this analysis , i.e., wish-fulfilling fantasy and seeking information were measured by the Ways of Coping Checklist (Folkman & Lazarus, 1980). The criteria for evaluating coping included measures of adjustment to illness, such as acceptance, dependency and feelings of uselessness and a measure of general emotional state, i.e. negative and positive affect. The findings showed that coping by *seeking information* (search for information and advice about the illness and its treatment) was related to better adjustment but *wish - fulfilling fantasy* (pining and longing for the illness to go away or be over with), was linked with poor adjustment, this was the same for all 4 groups of patients. The longitudinal findings of the study further showed that coping by *wish - fulfilling fantasy remained associated with and predictive of poorer adjustment.*

Felton and colleagues (1984), later reported additional cross sectional results from the aforementioned study. This time including 170 patients how had suffered from one of those 4 chronic illnesses (hypertension, diabetes, cancer and rheumatoid arthritis) for an average of 65 months. Coping was assessed like before, using 55 items from the Ways of Coping Checklist, in addition 10 items were adopted from previous research (Pearlin and Schooler) or developed through a pilot study. The coping items were factor analysed providing the following 6 scales: *cognitive restructuring* (efforts to find positive aspects of the illness and opportunity for inner growth), *emotional expression* (expressing emotional strain, for example, getting angry or joking), *wish-fulfilling fantasy, self-blame* (blaming oneself in order to avoid accepting the illness as a chronic problem), *information seeking* and *threat minimisation* (refusal to dwell on thoughts about the illness - put distressing thoughts aside). Psychological adjustment was assessed through, acceptance of illness, self-esteem and positive and negative affectivity. The main findings of this study showed that overall the type of coping strategies used by patients

with different illnesses were largely the same. The one exception being patients with rheumatoid arthritis who used cognitive restructuring, emotional expression and wish-fulfilling fantasy more than others. After accounting for type of illness, the results showed that each of the psychological adjustment measures was significantly explained by 2 or 3 coping strategies, explaining up to 11% of the variance. Findings showed that coping by *cognitive restructuring and information seeking was positively related to positive affect and cognitive restructuring was also found to be related to higher self esteem. Emotional expression, wish-fulfilling fantasy and self blame were related to negative affect, lower self esteem and less acceptance of illness. Finally, threat minimisation was related to more acceptance of illness.* The authors concluded that these results suggested that a modest variation in psychological adjustment could be explained by coping strategies. However, particular diseases were not exclusively linked with particular ways of coping.

Schussler (1992) when examining three groups of patients (N=205) with chronic illness, rheumatoid arthritis, sarcoidosis and coxarthrosis, assessed 6 months after diagnosis showed similar results. Coping by *wishful thinking*, assessed by the Ways of Coping Checklist, was found to be *concurrently related to viewing the illness as enemy, negatively related to seeing the illness as a challenge and predictive of worse health outcome assessed 6 months later.* Other studies examining the effects of coping on adjustment to chronic RA (also using the Ways of Coping Questionnaire), have further replicated these findings (Parker, et al., 1988; Manne & Zantra, 1989). All these studies showed that *seeking information* and/or *cognitive restructuring* as a coping strategy was associated with better psychological well being, but *wish - fulfilling fantasy* was related to and predictive of poorer well being. Felton and Revenson (1984) pointed out that the explanation for this could lie in that people with accurate and extensive information about how to care for themselves may be better informed about the meaning of their symptoms or may engage in more appropriate health practices. Wish - fulfilling fantasy, on the other hand entails thoughts about what might have been and a self - pitying longing for better times, as a consequence this provides no escape from the stresses of the illness.

A more recent longitudinal study on coping with RA, also carried out by Revenson and Felton (1989), suggested that strategies of coping, measured by six scales derived from the Ways of Coping Questionnaire, in the early stages of the illness (a few days following diagnosis) appeared to be unable to influence psychological well being, measured by positive affect. However, in the later stages of the illness (6 - 7 months later) coping strategies such as *emotional expression, wish - fulfilling fantasy* and *self blame* were predictive of poorer outcomes in terms of psychological well being.

Variability and stability in coping with rheumatoid arthritis over time.

Other longitudinal studies (Revenson et al. 1991) have shown that the pattern of coping with RA changes over time. Some coping strategies such as *gathering information, seeking spiritual comfort* and *seeking emotional support* showing more consistency than others, including thoughts about solutions or distraction. Coping with RA has also been shown not to change with illness duration (Gunther et al., 1994).

Is coping related to and predictive of pain and disability in patients with rheumatoid arthritis?

How patients cope with RA does not only affect their psychological well being but also the extent of their disability and pain. Two recent studies on coping with RA have shown this relationship (Newman et al. 1990; Stewart & Knight, 1991). Newman et al. (1990), studied how 158 patients with RA coped with their illness and how their coping strategies related to pain and disability. Coping was assessed by a 36 item questionnaire called the "Coping with Arthritis Questionnaire". This instrument was developed from interviews with patients with arthritis, from specific strategies suggested by patients' health care staff and by using the Ways of Coping Questionnaire. The results of the study showed that patients who coped by *confronting* the disease, *engaged in physical activity* and *expressed their feelings* showed lower levels of pain and disability than those who used denial, wish - fulfilling fantasy and distraction.

Stewart and Knight (1991), also examining the relationship between coping, pain and disability, studied 53 women who had been suffering

from RA less than 7 years. They were approached while attending a rheumatology clinic with the follow up interview completed 18 months after the initial interview. Coping was assessed by the Coping Strategies Questionnaire, a 64 item questionnaire including 8 sub-scales (see section 2.1.7.). The findings from this study showed that *coping strategies were significantly related to concurrent physical disability and pain.* Furthermore, *coping strategies* reported in the initial interview were found to be *predictive of pain at the 18 months follow up* time, which particular strategies were predictive was however, not reported.

The final study to be reviewed here on coping with RA is the study carried out by Smith and Wallston (1992). This was a longitudinal study on adaptation in 239 patients with chronic RA, including an assessment of coping and depression. The study spanned 4 years of data collection, subjects completed questionnaires which were mailed to their homes every 6 months for the first 3 years with the final questionnaire being sent at the end of the 4th year. Coping with arthritis related pain was assessed by the Active and Passive Coping sub-scales of the Vanderbilt Pain Management Inventory (Brown & Nicassio, 1987). Active coping in this context is defined as attempts to continue to function despite the pain, for example by ignoring the pain or staying busy. Passive coping on the other hand, includes strategies such as going to bed, restricting social activities etc. The data analysis of this study included both correlations and path analysis which showed a number of interesting relationships and predictions with a considerable contribution from ways of coping. These included the use of *passive coping with pain* being related to less initial health status, lower life satisfaction, higher levels of depression, more psychological impairment and pain and lower internal locus of control beliefs. Further analysis showed an appearance of a vicious cycle involving coping, where helplessness appraisal and passive coping with pain appeared to feed on one another, with the presence of one contributing to an increase in the other. *Passive coping with pain* also appeared to *predict increases in psychological impairment* (such as, decreased family interactions, hobbies, sport, sexual activities, more sleeping, decrease in social activities, working and less comforting and helping others), both directly and indirectly through its influence on the perceived quality of emotional support. Psychological impairment appeared to predict reduced perceived competence and to predict increased depression and helplessness

appraisal. In this manner the cycle was completed, involving helplessness, passive coping with pain and psychological impairment. These findings clearly show the importance of examining coping both over a longer time span and in relation to a number of different variables.

On the whole the central findings of this and other research on coping with rheumatoid arthritis suggest, as also pointed out by Newman (1993), that how individuals cope with their illness affects not only their psychological well - being but also the extent of their pain and disability.

Coping and adjustment to cancer.

How patients cope with *cancer* has been another big area of interest in the study of how coping strategies relate to and affect illness recovery and adjustment.

Traditionally, post operative cancer patients have been studied in terms of how many survive and for how long and in this manner the effectiveness of different coping strategies has been evaluated in relation to survival rates. However, as the life span of individuals who have been treated for cancer increases, an interest in patients quality of life has begun to emerge. Although the earlier cancer research concentrated mainly on the quantity rather than the quality of life, this research provided a considerable contribution to the understanding of the influence of psychological factors, including coping, on the development and course of cancer prognosis.

One such study carried out by Greer et al. (1979), examining 69 women with early stage breast cancer, showed that patients' coping strategies, measured 3 months post operatively, were related to outcome 5 years later. Survival rate was significantly greater among those patients who had reacted to the cancer by *denial* or had a "*fighting spirit*" than among patients who had responded with *stoic acceptance* or feelings of *helplessness* or *hopelessness*. This same patient population examined again 10 years later showed that a favourable outcome was still more frequent in those who coped by "fighting spirit" and denial compared to those coping with stoic acceptance or showing helpless/hopeless response (Pettingale, 1984). Derogatis et al. (1979), when studying 35 women with metastatic breast cancer found similar results when they compared short

and long-term survivors. *The long-term survivors' coping strategies involved more suppression or denial of affect and psychological distress.* These studies concluded as a likely explanation for these results that the kind of psychological response adopted by patients affected their outcome.

Variability and stability in coping with cancer.

How coping with cancer changes over time has also been of interest to researchers in this field and is of particular importance to this thesis as it was one of the aims of the present study to examine how coping changed over time. Heim et al. (1993), examined the *variability* and *stability* of coping in 74 patients with breast cancer over a period of 3 - 5 years with 3 - 6 months intervals. Coping was assessed by the Bernese Coping Modes, an instrument including 26 different coping modes which are classified as behavioural, cognitive or emotion oriented. The overall findings of the study were both in favour of stability as well as variability in coping. The most stable coping strategies used by these patients over time included, *attention and care* (i.e. getting social support), *acceptance - stoicism, diversion* (attention is directed away from the illness and towards something else) and *tackling* (i.e. seeking information, taking active part in therapy etc.). Variability in coping appeared to depend on the stage or time of the illness, with attention - care, acceptance - stoicism and problem analysis being the most prominent ways of coping during hospitalisation and the operation period. Other coping strategies came into use at later stages such as optimism and self - validation during radio- or chemotherapy. Coping by *acceptance - stoicism* did however continue to be used at all stages. During rehabilitation and reintegration the above coping strategies continued to be used but with a new emphasis on coping by comparing oneself with others who are worse off (relativizing) and being helpful to others (altruism). Patients who suffered relapse still showing acceptance - stoicism as the most common way of coping, they also showed coping by tackling and expressing trust in carers by passive co-operation high in the coping rank order. Finally, patients who faced the terminal phase, having to cope with the process of dying, mainly showed coping by attention, care and religion as well as attempting to play the illness down, deny it, minimise or ignore it (dissimulation).

Is coping related to and predictive of distress in patients with cancer?

Another study (Carver et al. 1993), examined how coping with cancer changed over time as well as assessing its relationship with other variables including distress. This is the Carver et al. (1993) longitudinal study on 59 women with early stage breast cancer which is of particular interest to this thesis as it measured coping strategies using the COPE questionnaire, the same instrument as was used in the present research. Coping was measured on 5 occasions, 1 day pre surgery, 10 days post surgery, and at 3, 6 and 12 months follow ups. Patients also reported their overall optimism about life and their level of distress. The results from this study showed that many coping strategies were used more as an early response to the illness but significantly less at later follow ups. These included, *active coping, planning, use of religion, seeking social support, restraint coping, self-distraction* and *suppression of competing activities. Acceptance* was the most reported coping strategy at all times. The study also examined the relationship between coping and levels of distress. This analysis found three coping strategies which were significantly predictive of lower distress: coping by *acceptance, use of humour* and *thinking positively* about the illness were all concurrently related to and predicted *lower levels of distress.* Other coping strategies did however, predict poorer adjustment, with *denial* and *behavioural disengagement* (feelings of giving up or withdrawing) repeatedly related to *higher levels of distress*. Optimism and coping strategies were also found to be related, optimistic women were more likely to accept the illness and less likely to deny it or experience feelings of giving up or withdrawing. Path analysis indicated that these three coping strategies (*acceptance, denial* and *behavioural disengagement*) acted as mediators through which optimism was related to distress at different times in the study and to changes in distress from one time to another. This study therefore clearly highlighted the important role of coping in adjustment to illness. Stanton and Snider (1993) in studying women undergoing a biopsy for breast cancer, showed further support for the impact of coping on patients' levels of distress. Among women who were diagnosed as having cancer, coping by *cognitive avoidance* (wishful thinking and turning the situation to others) at pre biopsy was found to predict *higher levels of distress* both after the positive diagnosis and following surgery.

A cross - sectional study by Dunkel-Schetter and colleagues (1992) assessed how coping affected adjustment in a large sample (N=603) of patients with cancer. The sample was heterogeneous with respect to type and severity of cancer, in all 8 types of cancer were included, with the majority of patients suffering from breast cancer (42%). Time since diagnosis ranged from newly diagnosed (25% in previous 18 mth) to first diagnosed several years ago (70% in previous 5 years, 50% in previous 3 years). Letters including a 31 page questionnaire were mailed to each participant. The questionnaire consisted of questions concerning the following issues: sociodemographic and personal background items, information on medical condition, health care providers, social networks/support, stress, adjustment, the Ways of Coping Questionnaire (WCQ) adopted cancer version and the bipolar version of the Profile of Mood States scale. The authors identified a set of specific cancer related stressors based on results from previous research, including fear and uncertainty about the future, limitations in physical ability, pain, treatment, and problems with family and friends related to cancer. Respondents were asked to pick the one that had been the most stressful for them or identify their own. The WCQ was evaluated for its applicability to cancer, 6 items were dropped, some were reworded and 4 items added. The respondents then answered the WCQ cancer version with the most stressful problem they had picked in mind. Factor analysis was carried out on the coping data obtaining the following 5 factors: *seek and use social support, focus on positive, distancing, cognitive escape-avoidance* and *behavioural escape-avoidance.* Results showed that the most reported coping strategy was *distancing*, followed by *seeking support* and *focus on positive.* Assessment of relationships between demographic variables and way of coping showed the following results: Younger patients coped more by seeking support, focused more on the positive and used more behaviour escape-avoidance. Those who were less educated coped more by using distancing and cognitive escape-avoidance. Being religious was related to more cognitive escape-avoidance coping and more focusing on the positive. Participation in support groups was related to more support use, more focusing on the positive and more both behavioural and cognitive escape-avoidance coping. Living alone was related to more support seeking and more behavioural escape-avoidance. Finally, sex was unrelated to coping. Other results showed that the specific problem patient had identified as coping with was not related to patterns of coping. Type

of cancer did not appear to be related to coping strategies with one exception, patients with breast cancer were more support seeking. The more time since diagnosis was related to more coping by behaviour escape-avoidance. Finally, *less emotional distress* (assessed by the POMS) was related to *more coping by seeking social support, more focusing on the positive and more distancing. More emotional distress,* was on the other hand, *related to more coping by both behaviour and cognitive escape-avoidance*. The authors in their conclusion pointed out that the fact that distancing was the most reported coping strategy could be due to the ambiguity of the outcome of most cancers and the uncontrollability of the disease. They also argued that as two escape avoidance coping patterns, behavioural and cognitive, had not been found in community samples, this might suggest that they are primarily a response to illness.

Is coping concurrently related to levels of distress?

Moving on from studies on cancer to other chronic illnesses, but keeping with how coping relates to and affects levels of distress, a cross - sectional study carried out by Jahanshahi (1991), looked at 67 patients suffering from spasmodic torticollis in relation to depression and coping strategies. Coping strategies (assessed by the WCQ), were divided into adaptive and maladaptive coping on the basis of how they correlated with severity of depression. The results of this study showed that *wish-fulfilling fantasy* and *religious faith* were *positively related to depression* and therefore considered as maladaptive coping strategies. *Threat minimisation, positive reappraisal, cognitive restructuring* and *instrumental coping* were adaptive coping strategies, they all *correlated negatively with depression.*

Another cross - sectional study finding a relationship between coping and distress was carried out by Frank et al. (1987). They divided 53 persons with spinal cord injury into 2 groups depending on their coping strategies (measured by the WCQ) and their health related beliefs. These two groups showed a significant difference in psychological distress, with those individuals using fewer coping strategies experiencing less depression. Whereas the other group which utilised more coping by

wishful thinking, mixed coping, growth coping and *self - blame*, showed more distress.

Yet another cross - sectional study (Bombardier, et al. 1990), also using the Ways Of Coping Checklist Revised to measure coping, found a relationship between coping and levels of depression. The participants in this study were 101 patients with a wide range of medical and psychiatric diagnoses, including chronic headache, low back pain, cardiovascular and gastroenterologic disorders and chronic fatigue. The results from this study confirmed previous research by replicating the positive relationship between coping by *wishful thinking, avoidance* and *self - blame* and higher levels of distress.

Studies, both cross - sectional and longitudinal, on various other chronic illnesses, such as sickle cell disease (Thompson et al. 1992; Gil et al. 1992), asthma (for a review see Deenen & Klip, 1993), HIV and AIDS (Folkman et al. 1993; Blomkvist et al. 1994; Pakenham et al., 1994), and chronic depression (Rohde et al. 1990; Billings & Moos, 1984), have also found a relationship between coping strategies and psychological adjustment, in particular in relation to more passive, pessimistic or avoidant coping and higher levels of distress.

Is coping related to adjustment to chronic low back pain?

A number of studies have been conducted in order to examine the role of coping strategies in patients suffering from chronic low back pain (Harkapaa, 1991; McCrachen & Gross, 1993; Valach, et al. 1990; Valach & Toscano, 1993). In a majority of these studies coping has been found to be related to health outcome and social adjustment. For example, a cross - sectional study by Valach et al. (1990), examining 672 individuals with chronic low back pain (CLBP) found coping strategies to be related to social adjustment. Social adjustment included assessment of occupation, finances, family life, social contacts and social activity. Coping, assessed by asking patients about their self attributions for coping, by *tackling, optimism, preserving composure, acceptance, thought as diversion* and *activity as diversion*, were all found to be related to better social adjustment. Coping by *compensation, passive co-operation, resignation,*

social withdrawal, rumination, self - accusation and *valorisation*, were on the other hand associated with worse social adjustment.

Other cross - sectional studies on patients suffering from chronic low back pain have found a relationship between coping strategies and anxiety and depression (McCrahen & Gross 1993; Harkapaa, 1991). Harkapaa (1991), examined the relationship between distress and coping in 476 chronic low back pain sufferers. Coping strategies were assessed by a 27 item questionnaire, including both cognitive and behavioural coping strategies, where the subjects themselves assessed how often (1 = never to 3 = often) they used each strategy in dealing with their back pain. Harkapaa's results showed that *higher distress was related to more use of passive cognitive coping strategies, i.e., hoping and praying and catastrohizing thoughts.* McCrachen and Gross (1993), studied 165 patients with chronic pain, mostly low back pain. Coping was assessed by the Coping Strategies Questionnaire (CSQ) and the Pain Anxiety Symptom Scale (McCrachen et al. 1992), was used to assess pain specific anxiety symptoms. This scale includes four 10 item sub-scales measuring, cognitive anxiety responses ("I find it hard to concentrate when I hurt"), escape and avoidance anxiety ("I avoid important activities when I hurt"), fearful appraisals ("I think that if my pain gets too severe it will never decrease") and physiological anxiety ("I become sweaty when in pain"). The scale is on a 6 point response format from 0 = never to 5 = always. The results from the study showed that *cognitive pain coping strategies* were related to *more cognitive anxiety, greater use of pain behaviours as coping* was related to *escape and avoidance anxiety* and finally *coping by catastrophising* was related to *overall anxiety* symptoms. The authors of the study pointed out that these results could indicate that cognitive anxiety may inhibit coping, whereas physiological anxiety may enhance it.

All these studies have been cross - sectional studies and one can therefore not make any assumptions about causality. It is impossible to judge whether coping led to depression and/or anxiety or vice versa. However, another cross sectional study carried out by Weickgenant et al. (1993), according to the authors interpretation, pointed towards the possibility that coping, as measured by the Ways of Coping Questionnaire - Revised (Vitaliano, et al. 1985), might be affected by levels of distress and not the other way around. They divided patients with chronic back pain into two

groups, those with high scores on depression (n=37) and non - depressed patients (n=40) and a third group including healthy control subjects (n=40). The results showed that *depressed patients reported more use of passive - avoidant coping strategies than did the non - depressed and the controls.* The authors concluded that an over - reliance on passive - avoidant coping strategies was not characteristic of all chronic low back pain patients, but seemed to be more likely as a function of depressed mood. Although, it is possible to speculate in this manner that depression led to passive - avoidant coping, there is, like in the aforementioned studies, no way of knowing what came first i.e., avoidant coping which then resulted in depression or depression which then resulted in the use of passive - avoidant coping. More research of this kind is needed in order to be wholly conclusive on this matter.

Attention versus avoidant coping and adjustment to illness.

Other studies on coping have focused exclusively on the effectiveness of avoidant vs. attention coping strategies. A meta analysis, including a number of different studies on coping, including 5 studies on coping with MI, was performed by Suls and Fletcher (1985), in order to assess the efficacy of these different strategies looking at short term as opposed to long term outcomes, such as treatment and rehabilitation. Suls and Fletcher defined **attention coping** strategies as those ***strategies which focus attention on the source of stress and/or one's psychological/somatic reactions to the stressor,*** these included, high somatic concern, active coping, vigilance, reappraisal, high hardiness and no diversion. **Avoidant coping** strategies were on the other hand, defined as ***strategies which focus attention away from the source of stress and/or one's psychological/somatic reactions to the stressor,*** including for example, denial, low somatic concern, distraction, diversion, blunter and avoidance. Studies were included in the analysis if they met the following four criteria: a) explicit operationalization of stressor; b) attention and avoidant strategy conditions that were operationalised; c) quantifiable outcome measure and d) reported length of time between occurrence of the stressor and measurement. Forty three studies met these criteria, 29 were classified as short term, i.e., outcome was measured on the day that the stressor occurred, the remaining 14 studies were considered as long term, i.e., had an interval of at least 3 days before

adjustment was assessed. Twelve of the short term studies assessed attention versus avoidant coping in relation to cold pressure, 1 in relation to heat pressure, 1 radiant heat, 2 childbirth, 1 noise, 1 jogging, 1 treadmill, 1 dynamometer, 3 in relation to distress film, 4 shock, 1 RT task and 1 assessed attention versus avoidant coping in relation to coloposcopy. Of the long term studies 5 assessed avoidant versus attention coping following MI, 4 in relation to surgery, 1 pain, 1 bronchial asthma and the remaining 3 examined attention and avoidant coping following various life events. The overall results of these analysis revealed that *avoidant coping strategies were more effective for short term outcomes but attention strategies were better in the long term.* These results indicate that the point in time the effectiveness of coping strategies is assessed is critical, therefore stressing the importance of assessing coping at more than one time point. The results in relation to the MI studies included in the analysis, showed that for 2 studies attention coping was related to better adjustment, as assessed in terms of recurrent MI, survival, return to work, cardiological outcome, medical consultation and satisfaction. Two of the MI studies favoured avoidant coping in relation to outcome, as measured in death, return to work and resumed sexual activity. The 1 remaining MI study in the analysis did not favour one strategy over another as assessed in relation to depression and blood pressure outcome. These contradicting results in the MI studies could be due to the different variables used as outcome measures or result from the different interval time points. Future studies, as suggested by Suls and Fletcher, need to use comparable outcome measures at each point of measure and examine attention and avoidant coping immediately following an event and again at later times.

More recent studies have found further support for this "time x strategy" hypothesis. A study by Holmes and Stevenson (1990) looked at two groups of patients, one with recent - onset pain (less than 4 weeks, n=70) and another with chronic pain (more than 6 months, n=70). Their results showed that *individuals with recent - onset pain using avoidant coping strategies* (as measured by the Coping Scale by Billings and Moos, 1981), were *less anxious and depressed, had lower back pain severity* and *higher levels of social activity.* The reverse was true for patients with chronic pain, those using *attention coping strategies experienced less distress, less pain* and *more social activity.* Other studies examining avoidant and/or attention coping have further showed the difference of these

strategies. For instance, in relation to illness adjustment in a sample of 1198 patients with chronic diseases (hypertension, diabetes and heart disease) *avoidant coping* (assessed by the Coping Scale by Billings and Moos, 1981) was found to be related to *less adherence with doctors recommendations* and *higher distress* (Sherbourne et al. 1991). In a sample of 73 blood donors *avoidant coping*, assessed by recording subjects thoughts and rating them according to the Billings and Moos (1981) Coping Scale, was found to be related to *less distress* (Kaloupek & Stoupakis, 1985). Finally in a study including 150 elderly people assessing the effects of life events on health status, using *avoidance coping*, (assessed by the Ways of Coping Questionnaire using a "yes-no" response format), as a response to stressful life events was found to be *related to and predictive of more health symptoms* (Smith, et al. 1990).

2.2.2. Coping and adjustment to MI.

Denial and adjustment following MI.

How patients cope with MI has been of interest to health care professionals for many years. The earlier empirical studies of patients with MI were almost exclusively devoted to the mechanism of coping by denial. The study by Froese et al (1974), is among the earlier studies of this kind. They looked at two groups of MI patients, deniers (n=19) and non-deniers (n=17) (using the Hackett - Cassem Denial Scale), through their hospital stay. The aim of the study was to determine if anxiety and depression ratings would differ for deniers and non-deniers. The findings showed that *patients who denied having had an MI were less anxious and less depressed than non deniers*. Because this study was limited to the hospital phase it could not address the question of whether denial is adaptive or maladaptive during the post hospital phase. Croog and colleagues (1971) in a study of 345 male MI patients did however, find that denial was a persistent way of coping. They interviewed patients on two occasions, 1 month and 1 year after discharge from hospital and found that *patients who were classified as deniers in the first interview remained deniers 1 year later.* The methodology of classifying patients into deniers or non - deniers in this study was based on a "no" or a "don't know" response to a single question, i.e., "Do you think you have had a heart attack?" It is however difficult to know whether the patients were actually

denying the illness on the basis of this single question. They genuinely might not have know or not been sure if they had an MI, for example through lack of communication with health care professionals.

A more recent study by Levenson et al. (1989) assessed the affect of denial on medical outcome in patients with unstable angina during hospitalisation. The patients were divided into two groups, one including low - deniers (n=23) the other including high - deniers (n=25), as measured by the Hackett-Cassem Denial Scale. The results like in previous studies, showed a more favourable outcome for high deniers than low deniers. Compared to low deniers, *high deniers had half as many episodes of angina and were more likely to reach medical stabilisation.* Furthermore, two myocardial infarctions and one death all occurred in low deniers.

A longitudinal study (Havik & Mæland, 1988), measured three aspect of denial in 367 patients with MI in regard to medical, social and psychological outcome over a period of 3-5 years follow up. Different aspects of denial, based on the authors' previous work (Havik & Maeland, 1986), were measured according to what was being denied, including, denial of illness, denial of impact and suppression. Overall results of this study showed that low level of *denial of illness* was associated with more problems related to work, sexual life, physical activities and with a higher mortality rate. High levels of *denial of impact* were related to better emotional outcome (measured by levels of anxiety, depression and irritability) and also weakly associated with increased mortality. Suppression was only related to self-reported emotional distress. The authors pointed out that these results emphasised the necessity of meeting different aspects of denial according to what is being denied.

Other empirical studies on how patients cope with MI have found further support for the use of denial. Among these is a cross - sectional study comparing coping strategies in 223 patients with life - threatening (cancer n=74 and MI n=77) and non life - threatening (arthritis and dermatitis ((n=72)) illness, all patients were interviewed during hospital stay (Feifel et al., 1987a). Coping responses were measured by a Medical Coping Modes Questionnaire which was developed to measure three forms of coping: confrontation, avoidance and acceptance-resignation. The results

of this study showed that cancer and the MI patients did not differ significantly on any of the three coping scales and they used *avoidance coping* significantly more than coping by acceptance-resignation. However, the results did indicate that life - threatened patients (cancer and MI) used coping by confrontation significantly more than did non life - threatened patients (arthritis and dermatitis). This same study (Feifel et al. 1987b) also found that use of acceptance-resignation coping was particularly evident in patients with little expectation of recovery and lack of hope. Faller (1990), using a semi structured interview based on quantitative methodology, in studying 51 patients with MI also found that *denial*, defined as turning attention away from features of threat, was *present in the majority of cases*.

Another study on two groups of medical patients (MI n=29 and epileptic n=16 patients) whose blood pressure (BP) was measured during a stress interview, showed a favourable outcome for those patients coping by denial of illness. *Denial* of illness was found to be associated with *dampening of cardiovascular arousal* during the stressful situation (Warrenburg, et al. 1989).

The aforementioned studies indicate that an optimal coping strategy for a patient with MI would be to strongly deny it (i.e., resulting in less distress), but conscientiously follow the rehabilitation instructions. A patient who is able to follow this strategy must be able to tolerate the dissonance caused by adopting a treatment regime for an illness he/she never had. Bearing this in mind, denial could be a problem for cardiac rehabilitation, as one most likely needs patients' attention coping for success. Maintenance of denial in the post hospital phase could lead to non - compliance with medical advice and rejection of rehabilitation efforts, increasing the risk of reinfarction (Singer, 1984).

A descriptive study of coping with MI (Scherck, 1992), showed little evidence of attempts by patients to deny the existence of the illness as a means of coping. This study looked at patients (N=30) coping during the first 3 days of illness, showing that in an attempt to reduce, minimise, master and tolerate the demands of this stressful experience, they used many and varied coping strategies Among the most used coping strategies were *optimistic, confrontive, self-reliant* and *supporting*

strategies. This study did however, not examine coping in relation to any outcome measures, such as distress like the previous studies.

As with other illnesses, as was pointed out in the previous review, coping with MI by denial or avoidance, as the aforementioned MI studies have revealed, has in most cases been shown to be adaptive during the early stages of the illness but maladaptive in the long term. A study by Agren et al. (1993) found further support for this. While examining 36 male patients who underwent a coronary bypass surgery over a period of 5 years, Agren and colleagues (1993), found that those patients, (examined preoperatively), who *minimised* their illness, defined as viewing the heart condition in objective non-self terms and as a parenthesis in life, were *better adjusted* (measured in terms of mood, capacity for work and everyday activities) than those who confronted, acknowledged and accepted the illness. Furthermore, 6 months following the surgery, *more minimisers had returned to work.* However, one year after surgery this outcome was different, with *minimisers facing worse clinical outcome* than accepters. As the authors pointed out, these results indicated that minimising the illness was more adaptive in the short - term, whereas confronting, acknowledging and accepting was more successful in the long - run, resulting in better clinical outcome.

Are coping strategies related to levels of distress and other outcome following MI?

Other studies on coping with MI have looked further than just denial and avoidance and included other coping strategies in their analysis. Christman et al. (1988), examined the influence of coping methods on emotional distress and uncertainty following an MI. Seventy patients were followed up over a period of 4 weeks they were interviewed within 72 hours of admission to hospital and 1 and 4 weeks after discharge. Emotional distress was measured using the Profile of Mood States, a 65 item mood adjective checklist with responses on a 5 point Likert scale, ranging from "not at all" to "extremely". This scale measures levels of tension, depression, anger, vigour, fatigue and confusion. Uncertainty was measured by perceived uncertainty about symptoms, diagnosis, treatment and relationships with caregivers. Coping strategies, assessed by the Jalowiec Coping Scale, were divided into control-oriented coping, reactive

coping behaviours and passive coping behaviours. Results showed an increase in emotional distress over time and a significant decrease in uncertainty at 1 week post discharge but an increase 4 weeks after discharge up to the level of uncertainty at pre discharge. The use of passive coping behaviours and control oriented coping did not change over time, but the use of reactive coping behaviours was significantly less 1 and 4 weeks after discharge than before discharge. Higher emotional distress was significantly related to high levels of uncertainty. *Coping methods explained a significant amount of the variance in concurrent distress*, patients experiencing *high levels of distress* used *more reactive behaviour* coping aimed at reducing the distress, e.g. getting mad, blaming others, eating or smoking. Both uncertainty and emotional distress were associated with less use of control oriented coping behaviours. Patients experiencing greater uncertainty used fewer control oriented coping behaviours.

A longitudinal study by Terry (1992), examined levels of distress and a set of variables (see below) and their relationship with coping strategies in 40 patients with MI two to three weeks following the infarct and again 3 months later. Coping was measured by a 12 item questionnaire, derived from the coping measure by Billings and Moos (1981), with 6 items assessing problem focused coping including both behavioural and cognitive efforts directed towards management of the infarct, and 6 items measuring emotion focused coping strategies, which could be used to improve the emotional distress associated with an infarct. The study also included an assessment of coping effectiveness where the patients were asked "How well do you think you have coped with the MI?" The results showed *no support for a relationship between problem focused coping and better adaptation*, including anxiety, depression, locus of control beliefs, self - esteem, quality of family life and disruption to patients recreational and social activities. *Emotion focused coping* on the other hand was found to be *related to impairment of adaptation* to the MI. This included *emotion focused coping being related to high levels of anxiety, depression and high levels of psychological symptomatology* (as measured by the 12 item General Health Questionnaire), *high scores on the measure of disruption of social and recreational activities* and *poor subsequent ratings of own coping effectiveness.* This study, although longitudinal, did not report any predictive analysis of coping strategies.

Denollet (1991), also found a marked association between coping strategies and psychological distress, in a sample of 178 male cardiac patients when assessed at a beginning of a rehabilitation program and again at discharge, 3 months later. Coping was defined as negative affectivity, examined by the Dutch adaptation of the State Trait Anxiety Inventory and repression, assessed by Marlow-Crowne Social Desirability Scale (MC), this scale was used in order to identify low negative affectivity (NA) patients with a repressive coping style . Patients showing high negative affectivity initially reported much more psychological distress than patients with low negative affectivity and repression, and these group differences were maintained at discharge. Patients with low negative affectivity and coping by repression, however, did not differ from each other at both assessments. Another study by Denollet and Potter (1992), in an attempt to outline coping subtypes using the same sample as above, this time including 166 men with coronary heart disease, found a further support for a relationship between coping and distress. They identified 3 subtypes of coping, i.e., *negative affectivity, social inhibition* and *self-deception* and found them to be significantly related to self reports of subjective distress.

Finally, examining coping in relation to wider range of variables a recent study by Nolan & Wielgosz (1991), assessed adaptive and maladaptive coping strategies, as defined by The Structured Interview which identifies coping responses by means of *impatience, hostility* and *competitiveness.* The results showed that *patients using maladaptive coping,* defined as type A behaviour pattern, potential for hostility and anger-in, reported *greater distraction from MI symptoms, more relief-seeking behaviour,* and *greater perceived vulnerability to reinfarction.* Maladaptive copers also showed *delay in seeking medical assistance,* which indicates, as the authors pointed out, that maladaptive copers may require counselling directed at increasing their ability to monitor and respond to cardiac symptoms throughout their recovery.

2.3. Summary of review of coping with chronic illness.

The general conclusion from the studies reviewed here shows that coping has been found to be concurrently related to and predictive of adjustment to chronic illness. Summary of studies and research findings are presented in table 2.3.1. (see page 48-52).

Although different studies have approached assessment of coping in a variety of ways, the overall results could be summarised as follows:

Coping strategies change over time (Revenson, et al., 1991; Carver et al., 1993), with variability in coping related to stage and time of illness (Heim et al., 1993). Coping strategies have been found to change over time in other areas of study as well, such as in students before and after examination (Folkman & Lazarus, 1985; Bolger, 1990) and in adjustment to college (Aspinwall & Taylor, 1992).

Coping strategies are related to and predictive of pain and disability, in particular coping strategies which involve paying *attention* to the illness and its consequences have been found to be related to less pain and less disability (Newman, 1990; Holmes & Stevenson, 1990; Stewart & Knight, 1991).

Coping strategies are related to and predictive of distress levels (Smith & Wallston, 1992; Carver, et al. 1993; Stanton & Snider, 1993; Jahanshahi, 1991; Frank et al. 1987; Bombardier et al. 1990; Harkapaa, 1991; Holmes & Stevenson, 1990; Sherbourne et al. 1991; Kaloupek & Stoupakis, 1985; Froese et al. 1974; Havik & Maeland, 1988; Christman et al. 1988; Terry, 1992; Denolett, 1991; Denolett & Potter, 1991). *Passive or avoidant coping strategies were in a majority of studies (12 out of 16) related to and/or predictive of higher distress, while attention strategies were related to and/or predictive of less distress.*

Avoidant coping is related to better adjustment in the short term but attention coping is related to better adjustment in the long term (Suls & Fletcher, 1985; Holmes & Stevenson, 1990; Agren et al. 1993).

Coping strategies are related to survival rates, in particular denial and fighting spirit which have been found to be related to greater survival rates in patients with cancer (Greer et al., 1979; Pettingale, 1984; Derogatis et al. 1979).

Coping strategies are related to and predictive of social adjustment, including family relationship, return to work, sexual and physical activity (Valach, et al., 1990; Smith & Wallston, 1992; Terry, 1992). Here like before, *avoidant and passive coping strategies were related to worse social adjustment.*

Coping strategies are related to and predictive of health outcome (Schussler, 1992; Smith et al. 1990; Agren et al. 1993; Nolan & Wielgosz, 1991). Overall, avoidant coping and wishful thinking have been found to be related to and/or predictive of poorer health outcomes.

Based on these previous coping research findings, and supported by recent studies, the study presented here set out to examine the following points:

Does coping change over time (1 year) following MI? Can coping strategies be grouped into two broader dimensions of coping, i.e., attention vs. avoidant coping? If so, is avoidant coping related to less distress in the short term but higher distress in the long term? Are coping strategies concurrently related to and predictive of distress? Finally, do people use different coping strategies when coping with an illness then when they cope with other stressful situations in their lives.

On the whole the studies reviewed here have all made a considerable contribution to the understanding of the role of coping in illness adjustment, however, there is always need for improvement.

For instance, as pointed out elswhere (Cohen & Lazarus 1979; Parker & Endler, 1992) and in this review, there is a need for more consistency in coping assessment tools as well as in the types of outcome variables examined. Differences in the ways researchers define and classify coping strategies also limits general conclusions. If different investigators used similar measures, this would increase the possibility of obtaining replication of results.

Furthermore, chronic illnesses are often very complicated and patients often have to face a range of difficulties, it is therefore important to study different aspects of the illness as patients may respond and cope differently to each one (Cohen et al, 1986).

Finally, there is a need for more longitudinal studies in this area, in particular following MI. Of the 6 longitudinal studies on coping following MI reviewed here, only 1 presented predictive longitudinal findings (Agren et al. 1993). Because of the duration over which a chronic illness extends there is a need to examine how coping strategies may change over time or be influenced by time. The repertoire of coping skills may increase over time as the individual learns new ways of managing their illness. Time can also have an effect on the state of the disease so it might be expected that the overall level of stress associated with the illness, would influence ways of coping. In order to gain more information on this there is a need for broadening the assessment of coping over a longer time span (Newman, 1990).

The present study tried to meet at least some of these critical points, i.e., it is a longitudinal study presenting predictive results, it examines a broad range of coping strategies and uses well validated and standardised measures (the COPE for coping strategies and the Hospital Anxiety and Depression Scale (HAD) to assess levels of distress), instruments which are now also wildely used within health research.

Table 2.3.1. Coping and adjustment to chronic illness: Summary of research findings.

Study	Type of Study	Subjects	Outcome	Results
Felton & Revenson (1984)	Longitudinal	151 patients with either rheumatoid, arthritis (RA), cancer, diabetes or hypertension	Acceptance, dependency feelings of uselessness & negative & positive affect	Coping by seeking information related to better adjustment vs. wishful filling fantasy = poor adjustment.
Felton et al. (1984)	Cross-sectional findings reported	170 patients same sample as above	Acceptance of illness, self-esteem and negative & positive affectivity	Coping by information seeking, cognitive restructuring and threat minimisation = better adjustment vs. coping by wish-fulfilling fantasy, emotional expression & self blame = poorer adjustment. Coping not related to type of illness.
Schussler (1992)	Longitudinal	205 patients with chronic illness, chronic RA sarcoidosis & coxarthrosis	Illness recovery	Wishful thinking related to looking at illness as enemy, negatively related to looking at illness as challenge & predictive of worse health outcome.
Revenson & Felton (1989)	Longitudinal	45 patients with chronic RA	Positive affect	Coping strategies few days following discharge not related to outcome but 6-7 mth later coping by emotional expression wish-fulfilling fantasy & self blame related to poorer outcome.
Revenson et al. (1991)	Longitudinal	Patients with chronic RA	No outcome measure, assessment of how coping changed over time	Coping by gathering information, seeking spiritual comfort & emotional support = more consistency than others.
Newman et al. (1990)	Longitudinal	158 patients with chronic RA	Pain & disability	Coping by engaging in physical activity, expressing feelings & confronting related to lower pain & less disability.
Stewart & Knight (1991)	Longitudinal	53 women with chronic RA	Pain & disability	Coping strategies were related to pain and disability & predictive of pain 18 mth later.

Table 2.3.1. cont. Coping and adjustment to chronic illness: Summary of research findings.

Study	Type of study	Subjects	Outcome	Results
Smith & Wallston (1992)	Longitudinal	239 patients with chronic RA	Depression, life satisfaction & psychological impairment	Passive coping with pain = more depression, more psychol. impairment & more pain, also predictive of increases in psychol. impairment
Greer et al. (1979)	Longitudinal	69 women with early stage breast cancer	Survival rates at 5 year follow up	Greater survival rates if coping by denial or fighting spirit than if coping by stoic acceptance or feelings of help- or hopelessness
Pettingale (1984)	Longitudinal	Same sample as Greer et al's. study (1979)	Survival rates at 10 year follow up	Same as above.
Derogatis et al. (1979)	Longitudinal	35 women with metastatic breast cancer	Survival rates	Long term survivors coped more by denying or suppressing of affect & psychological distress
Heim et al. (1993)	Longitudinal	74 women with breast cancer	No outcome measure, assessment of how coping changed over time	Most stable coping strategies over time = attention - care, acceptance - stoicism, diversion and tackling. Variability in coping depended on stage & time of illness.
Carver et al. (1993)	Longitudinal	59 women with early stage breast cancer	Levels of distress	Coping by acceptance humour & thinking positively related to & predicted lower distress but denial and behaviour disengagement related to higher distress.
Stanton & Snider (1993)	Longitudinal	Women going for biopsy for breast cancer	Levels of distress	Coping by cognitive avoidance at pre biopsy predicted higher levels of distress both after positive diagnosis and following surgery.
Dunkel-Schetter et al. (1992)	Cross-sectional	603 patients with one of 8 different types of cancer	Emotional distress	Coping by seeking and using social support, focusing on the positive & distancing = lower distress vs. coping by behavioural & cognitive escape-avoidance = higher distress.

Table 2.3.1. cont. Coping and adjustment to chronic illness: Summary of research findings.

Study	Type of study	Subjects	Outcome	Results
Jahanshahi (1991)	Cross-sectional	67 patients with spasmodic torticollis	Levels of depression	Coping bywish-fulfilling fantasy & religious faith = more depression vs. coping by threat minimisation, positive reappraisal, cognitive restructuring & instrumental coping = less depression.
Frank et al. (1987)	Cross-sectional	53 people with spinal cord injury	Levels of distress	Coping by wishful thinking, mixed coping growth coping & self blame = more distress
Bombardier et al. (1990)	Cross-sectional	101 patients with different illnesses, chronic headache, low back pain, chronic fatigue etc.	Levels of distress	Coping by wishful thinking, avoidance & self-blame = more distress
Valach et al. (1990)	Cross-sectional	672 people with chronic low back pain	Social adjustment	Coping by generally paying attention = better social adjustment vs. coping by general avoidance strategies, withdrawal or passiveness = worse social adjustment.
Harkapaa (1991)	Cross-sectional	476 people with chronic low back pain	Levels of distress	Passive cognitive coping related to more distress
McCrachen & Gross (1993)	Cross-sectional	165 people with chronic pain	Anxiety	Cognitive pain coping strategies related to more cognitive anxiety, pain behaviours as coping related to escape and avoidance anxiety & catastrophising coping related to overall anxiety
Weickgenant et al. (1993)	Cross-sectional	Patients with chronic low back pain, 37 with high depression, 40 non depressed and 40 healthy control subjects	Levels of distress	Depressed patients used more passive-avoidant coping strategies than non-depressed and controls.
Suls & Fletcher (1985)	Meta-analysis including 43 studies	Patients with MI, asthma, pain, surgery & other people following various stressful experiences	Number of different adjustment measures, including: return to work, death, distress, fear, tolerance, discomfort etc.	Avoidant coping more effective in the short run but attention coping in the long run.

Table 2.3.1. cont. Coping and adjustment to chronic illness: Summary of research findings.

Study	Type of study	Subjects	Outcome	Results
Holmes & Stevenson (1990)	Cross-sectional	Two groups of patients suffering from pain: 70 with recent onset pain & 70 with chronic pain (6-7mth)	Levels of distress, pain & social activity	Those with recent onset pain using avoidant coping = less distress, less pain & more social activity. Those with chronic pain using attention coping = less distress, less pain & more social activity.
Sherbourne et al. (1991)	Longitudinal	1198 patients with chronic illness, i.e., hypertension, diabetes & heart disease	Adherence with doctors advice & levels of distress	Avoidant coping related to less adherence & higher distress.
Kaloupek & Stoupakis (1985)	Cross-sectional	73 blood donors	Levels of distress	Avoidant coping was related to less distress.
Smith et al. (1990)	Longitudinal	150 elderly people	Health status	Coping with a life event using avoidance coping related to & predictive of more health problem

Coping and adjustment to MI: summary of research findings.

Study	Type of study	Subjects	Outcome	Results
Froese et al. (1974)	Cross-sectional	Patients with MI, 17 deniers & 19 non-deniers	Levels of distress	Denial related to less distress
Croog et al. (1971)	Longitudinal	345 patients with MI	No outcome measure but assessment of consistency in denial	Patients who were classified as deniers 1 mth after discharge remained deniers 1 year later.
Levenson et al. (1989)	Cross-sectional	Patients with MI, 23 low deniers & 25 high deniers	Medical outcome	High deniers had fewer episodes of angina & more likely to reach medical stabilisation
Havik & Maeland (1988)	Longitudinal	367 patients with MI	Sexual and physical activity, mortality rate, irritability & levels of distress	Low level of denial of illness = more problems with work, sex life, physical activity & higher mortality rate. High denial of impact = less distress, irritability & increased mortality. Suppression = higher distress.

Table 2.3.1. cont. Coping and adjustment to MI: summary of research findings.

Study	Type of study	Subjects	Outcome	Results
Feifel et al. (1987a)	Cross-sectional	223 men with chronic illness, 74=cancer, 77=MI & 77=arthritis & dermatitis	Comparing the use of coping strategies in those 4 different patient groups, life-threatening vs. non-life threatening illnesses	Cancer & MI used similar coping strategies but more avoidance coping than non-life threatening patients
Faller (1990)	Cross-sectional	51 patients with MI	No outcome, assessment of prevalence of denial	Majority of patients used denial coping
Warrenburg et al. (1989)	Cross-sectional	29 patients with MI and 16 epileptic	Cardiovascular arousal	Denial of illness related to dampening of cardiovascular arousal
Scherck (1992)	Cross-sectional	30 patients with MI	No outcome measure, assessment of how patients coped	Most used coping strat. optimism, confronting, self-reliance & support.
Agren et al. (1993)	Longitudinal	36 men before & after bypass surgery	Mood, return to work, capacity to work, everyday activities & clinical results	Coping by minimising the illness = predictive of better adjustment up to 1 year but then minimising was related to worse clinical outcome.
Christman et al. (1988)	Longitudinal	70 patients with MI	Levels of distress	Reactive coping: eating, getting mad, blaming others or smoking = related to more distress
Terry (1992)	Longitudinal	40 patients with MI	Distress, self-esteem, quality of life, social & recreational activities & psychological symptomatology (GHQ)	Emotion focused coping related to higher distress more disruption of social & recreational activity, & more psychological symptomatology.
Denolett (1991)	Longitudinal	178 male cardiac patients	Levels of distress	Coping by high negative activity related to more distress.
Denolett & Potter (1992)	Same study as Denolett (1991)	166 male cardiac patients (same as above)	Levels of distress	Coping by negative affectivity, social inhibition & self - deception = higher distress.
Nolan & Wielgosz (1991)	Cross-sectional	201 patients with MI	Distraction from MI symptoms, relief seeking behaviour, perceived vulnerability to reinfarction & seeking medical assistance.	Maladaptive coping defined as type A beh. potential for hostility & anger-in, was positively related to all outcome variables.

Chapter 3 presents a literature review on causal attributions, organised in the following way:

3.1. Causal attributions.

CHAPTER 3.

Causal Attribution Review.

3.1. Causal attributions.

3.1.1. Causal attribution definition.

As has become evident in the previous chapter, stressful events, like chronic illness, may produce variable outcomes based on cognitive factors, such as coping (problem focused, emotion focused, avoidant, non-avoidant etc.). In addition, a person's beliefs about what caused the event (causal attributions), may play a crucial role in the appraisal or representation of a stressful event, which then affects the selection of coping strategies used and the appraisal of possible outcomes (Folkman, 1984, Leventhal et al. 1984).

Researchers (Koslowsky et al. 1978; Folkman, 1984; Leventhal et al., 1984) have pointed out and recognised that the perception and meaning of an event are among the most important factors in determining and affecting the coping strategies an individual will use. For example, in the case of a severe illness, the perception of causation by the patient might be of a key relevance, as it could influence the steps the patient might take in seeking treatment, following the doctors advice and participation in rehabilitation programs. In other words, it has become evident (Naea de Valle & Norman, 1992; Affleck et al. 1987) that patients hold beliefs about what caused their illness and these beliefs have been found (Affleck et al. 1987) to change throughout the recovery process and have an effect on actions an individual might take in response to the illness. Thus for instance, if a patient believes that eating fatty foods was a significant factor in causing their medical condition they might be motivated, and use as a way of coping, actions in order to change eating habits. On the other hand, if the patient believed that their illness was caused by fate or chance they might not see any reason to engage in behaviour changes which might however, be necessary in order to prevent further complications. Research has in fact found some support for a close association between blaming ones own behaviour and number of lifestyle changes in patients following MI (Naea de Valle & Norman, 1992). These points do however, need further investigation.

As the following literature review will show, causal attributions, in particular self-blame and other blame, have been found to have an effect on recovery and adjustment to illness and other events. In this context causal attributions are defined as ***"implicit and explicit causal explanations for behaviour and/or other events"*** (Turnquist, et al. 1988, p.55). In order to provide some background knowledge about causal attributions, causal attribution theory and related ideas are briefly described.

3.1.2. Causal attribution theory.

Attribution theory (Heider, 1958, Kelley, 1967, Wong & Weiner, 1981) suggests that when a person is faced with a sudden threat or change in their environment, they will initiate a causal search in an attempt to understand the reasons for that threat or change. Individuals are thought to engage in attributional search in order to understand, predict and control threat and this is predicted to be especially important early on in the adjustment process. The theory further suggests that people spontaneously engage in causal searches when faced with negative, unexpected or unusual outcomes and by identifying such causes individuals are able to find or give meaning to such events. Furthermore, when an event results in a particularly bad outcome the individual will engage more actively in attributional search because a more threatening event demands an explanation in order to help the individual create a sense of meaning. These theoretical approaches of causal attribution theory have been used in order to test individuals' reactions and adjustment to stressful and unpleasant events.

3.1.3. Causal attribution research.

Causal attributions have been an important research subject since the mid-sixties both within social and cognitive psychology. Initially, causal attributions were examined in experimental settings however, since the 1970s causal attribution research has focused on experiences of real life events, such as severe accidents (Janoff-Bulman & Wortman, 1987), life - threatening diseases (Taylor et al. 1984), rape (Janoff-Bulman, 1979), unemployment (Ostell & Divers, 1987), exam failure (Follette & Jacobson, 1987), abortion (Major et al. 1985), divorce (Bradbury & Fincham, 1990),

etc. Research is carried out in order to examine causal attributions and their functions for the cognitive and emotional adjustment to life events. The importance of finding reasons or causes for unwanted outcomes has for example, been found in parents of children with leukaemia (Chodoff et al. 1964), who preferred to blame themselves for their child's illness rather than accept that there is no established explanation for it. Thus, finding a cause for the child's condition was so important to these parents that they would rather take the blame for it themselves than accept that there was no identified cause.

While recognising that the search for meaning and causes, as suggested by attribution theory (Heider, 1958), might be particularly important in adjustment and coping with serious illness, a number of studies have been carried out including a variety of medical populations (Taylor et al. 1984, Janoff-Bulman & Wortman, 1977; Schulz & Decker, 1985; Affleck et al. 1987). These studies have sought to examine what kind of attributions patients make and assess the relationship between causal attributions patients make about their illness and their subsequent recovery. Findings have revealed that a majority of patients with a life - threatening illness or injury make and report attributions about the origin of their condition. Attributions also seem to be associated with type of illness, time since diagnosis and severity of the disease. Furthermore, as the following review will reveal, patients who make attributions have been shown to be better adjusted than patients who fail to report any attributions. Finally, while some attributions, such as self-blame, were related to good adjustment, others were found to be related to poor adjustment, generally other-blame.

3.1.4. How do causal attributions relate to adjustment?

The question of how attributions contribute to good or poor adjustment has been a matter of interest to scientists for some time. Mainly three factors have been hypothesised as mediators between attributional characteristics and adjustment. These include preservation of self-esteem (Shaver, 1970), maintenance of a perception of justice (Lerner, 1965; Lerner & Matthews, 1967), and sense or achievement of control (Heider, 1958).

The first hypothesis put forward by Shaver (1970), uses the term "defensive attributions" which focuses on the influence of attributions to adjustment by maintaining or enhancing self-esteem. According to this hypothesis people's reactions to negative events are affected by their desire to avoid blame for other future misfortunes. This is particularly found in people who are observers and have not actually experienced the unwanted event themselves. By using such "defence attributions" for example, by attributing the event to chance people manage to protect themselves in case such an event might one day happen to them. This hypothesis also suggests that people are more likely to accept more causal responsibility for positive outcomes than for negative ones. Therefore, if one is recovering well from an illness one is likely to attribute the cause for the recovery to oneself, i.e. preservation of self-esteem. Thus, as Janoff-Bulman and Wortman pointed out (1977), defensive attribution theorists would predict that people's motivation to maintain a positive self-view would lead them to attribute their misfortune to external factors rather than to their own shortcomings.

The second hypothesis for mediation of attribution effects involves Lerner's (1965) just world principle. According to this idea people have a need to believe that people get what they deserve and deserve what they get. Thus, people's reactions to negative events may be affected by a desire to maintain a belief in a just world. If people believe that they deserve the outcome they received, they will either re-evaluate the event and its outcome as positive or blame or feel bad about themselves.

The third hypothesis suggests the influence of perceived control over one's self and one's environment (Heider, 1958). Personal sense of control is identified as primarily attributing responsibility for events to oneself whereas lack of personal control beliefs are thought to show attributions to powerful others, chance or fate. A support for this mechanism has been reported, for example, a study by Martin and Lee (1992), examining a variety of process variables connected with an MI, found that individuals who perceived the MI as a controllable event utilised more self-blame. Heider (1958) suggested that by attributing causality to factors under one's own control and therefore most readily modifiable factors, people could adjust better to an unexpected event as well as to the threat of it happening again. Research examining causal attributions and adjustment to life -

threatening illness, such as cancer and MI, has found support for this (Affleck et al. 1987; Taylor et al. 1984; Ell & Haywood, 1985). However, as Turnquist et al. (1988) pointed out, perceived control may not mediate attribution - adjustment associations in all circumstances. Attributions which increase a patient's perception of control may be more adaptive in cases where there is a strong link between people's behaviour and the life event. These kind of control beliefs could also be questioned if an event, such as an illness, worsened or recurred. Strong control beliefs could in such cases be related to subsequent poor adjustment.

3.1.5. The nature of causal attributions.

Scientists (Weiner, 1979) have also made an attempt to explain the nature of causal attributions people make. Weiner and his associates (Weiner et al. 1971; Wong and Weiner, 1981) carried out series of experiments where subjects were asked to identify causes for various outcomes, usually success or failure, in hypothetical situations. As a result of these studies Weiner identified *three primary attributional dimensions* which accounted for the majority of reasons people gave for various outcomes. The first of these dimensions, labelled *locus* dimension, is concerned with the source of causality, that is, is the cause seen as being within the person themselves, some other people or in the situation, in other words, is the cause internal or external to the person. The second dimension labelled *control* dimension refers to whether the cause(s) is seen as being under the person's own control or as being controlled by others, either people or events. The third dimension, *stability* refers to prediction, will the causal factor(s) persist the same or will it change over time, is it seen as stable or unstable. Weiner did also identify two other dimensions which have been less documented and referred to, these are *intention* dimension referring to responsibility and purpose, and a dimension of *generality* which is concerned with the generalizability of a causal factor to other people or situations. These dimensions were found to be related to and affect different variables, success for example, was most commonly attributed to internal factors, whereas failure was attributed to external factors. The stability dimension was most often found to be related to predictability and expectancy for change, while the control dimension was related to self-esteem and the locus dimension was associated with judgements about personal characteristics, such as whether the person was considered

helpless or not (Weiner, 1979). Weiner's theory was initially mostly tested using hypothetical situations not real life experiences and could therefore not be generalised as applying to other than experimental conditions.

In order to examine to what extent Weiner's attribution model would apply to medical situations, DuCette and Keane (1984), set up a study where they could assess this idea and examined whether attributions patients made about the cause of their illness affected their recovery. Ninety patients undergoing thoracic surgery were interviewed 6 days post-operatively. The patients were asked two open-ended questions: "Why do you think you got the disease which required this surgery?" and "What reasons can you identify to explain your situation since surgery?" All answers were coded by two raters into the 3 dimensions proposed by Weiner, Locus dimension which indicated whether the attributions were internal or external, Stability, stable or unstable attributions, and Control dimension. An assessment of how well patients were doing after surgery was obtained from direct observation of each patient's performance, the interviews with the patients and information from chart or nursing plans. This assessment instrument examined four factors: pulmonary status, infection status, activity status and general outcome measure. The results from this study showed that those *patients who attributed their disease to unstable factors showed better recoveries.* On the whole the findings supported the idea that an *attributional search is valuable in understanding patients' responses to an illness.* Patients who made causal attributions indicated that the questions were important, in particular the question about why the illness had happened. Furthermore, *patients who did not have an answer to the two causal attribution questions showed poorer recovery than those who did have an answer.* It was therefore evident at least for those patients that making causal attributions about their illness was related to the patient's ability to recover. When testing the applicability of Weiner's theory to this population by coding patients' responses, the results showed that *only 2 of his dimensions* were necessary to account for the majority of the answers, these were the *Stability* and the *Control* dimensions. DuCette and Keane therefore suggested that little would be lost by categorising the attributions patients make about illness through a simple two dimensional system: *Stability* and *Control*. They however, pointed out the need for further research with other patient

populations in order to see if a modification of the model would be necessary.

Traditionally, the attributions people made were categorised in this way into broad and global categories like the ones above, in particular into either internal or external attributions. Attributing to external causes was initially thought to be less disruptive and cause less distress than if one attributed to personal and internal causes. However, research results were found to be contradicting which led scientists to look at separate dimensions of those broader terms. Although these categories are still useful and appropriate, researchers have moved on from a simple distinction into internal versus external attributions towards looking at causal factors within those broad terms, such as self-blame (an internal attribution) and other blame, chance or fate (external attributions) (for a review see Antaki & Brewin, 1982). Some of those individual attributions, in particular self-blame and other-blame have been a subject of a number of studies in this area, which have shown them to be related to recovery and adjustment in different ways (see below).

3.1.6. Self-blame.

Self-blame in its broad definition refers to blaming oneself, both one's character and one's behaviour for an event and would thus be categorised as a dimension of an internal attribution. Self-blame as a response to an unpleasant, unexpected and negative event, such as illness, has received considerable attention in the psychological literature and a number of studies have examined its effects on adjustment, results have however been contradictory. On one hand, self-blame has been associated with positive adjustment and coping, for example in accident victims (Janoff-Bulman & Wortman, 1977; Schulz & Decker, 1985), mothers of ill infants (Affleck et al, 1982), children with diabetes (Tennen et al., 1984) and rape victims (Janoff-Bulman, 1979). On the other hand, results have shown that blaming oneself can also be negatively associated with adjustment or be uncorrelated with adjustment outcomes, such as in cancer patients (Taylor, et al. 1984), in mothers of diabetic children (Affleck et al. 1985) in patients with acute burn wounds (Kiecolt-Glaser & Williams, 1987) and in individuals suffering from depression (Beck, 1976). This has led to two different views on the role of self-blame in adjustment. One view regards

self-blame as maladaptive, resulting in a lowered self-esteem and a correlate of depression (Beck, 1976). The other, views self-blame as an adaptive, positive psychological mechanism which is related to and enhances a belief in personal control over the outcome, which in turn enables people to perceive the causes as modifiable and predictable (Kelley, 1967; Chodoff et al., 1964; Janoff-Bulman & Wortman, 1977). In an attempt to solve this issue, Janoff-Bulman put forward a theory of two types of self-blame which theoretically could have different impact on adjustment. He (1979) pointed out that realising that self-blame may be both adaptive and maladaptive was the first step towards the verdict that there were in fact two different types of self-blame. One type representing an adaptive, control-oriented response (behavioural self-blame), the other a maladaptive, self-deprecating response (characterological self-blame).

3.1.7. Characterological versus behavioural self - blame.

The main distinction between these two self-blame attributions is the nature of the focus of the blame; Janoff-Bulman (1979) proposed that control related self-blame focuses on one's own behaviour, whereas esteem related self-blame focuses on one's character, an overall view of the kind of people individuals perceive themselves to be. The esteem related self attributions are referred to as "*characterological*" self-blame (or character self blame) and the control related kind "*behavioural*" self-blame (or behaviour self blame). The distinction between these two kinds of self-blame attributions can further be seen in the difference between *ability* versus *effort* attributions. Ability is stable and unchangeable therefore individuals who make an attribution to poor ability believe that there is little they can do to control the situation. Effort, on the other hand, is something one can change and control, individuals who make effort attributions will therefore believe that as long as they try harder, they will be able to control outcomes in a positive way. According to Janoff-Bulman, characterological self-blame corresponds to ability attributions and behavioural self-blame corresponds to effort attributions and they have very different implications for perceived personal control. The primary distinction between characterological self-blame and behavioural self-blame lies however, in the perceived controllability over the factor(s) being blamed, with behaviour self-blame being related to greater sense of control and character self-blame unrelated to such control beliefs. Janoff-

Bulman further suggested that in blaming one's behaviour, the individual is concerned with the future, in particular how he or she can avoid negative outcomes in the future. This concern for avoidability in the future is consistent with the idea of controllability as the basis for behavioural self-blame. Individuals who engage in characterological self-blame are on the other hand more concerned with the past, i.e., what it was about them that resulted in a negative outcome.

3.1.8. Model of learned helplessness and characterological self-blame.

A related idea, concerned with controllability as well as self-blame, was put forward by Abramson, Seligman and Teasdale (1978). This is the reformulated model of learned helplessness which maintains that after repeated, unsuccessful efforts at control the individual will give up responding, a term called "learned helplessness". The model suggests that when a person finds herself/himself helpless following a negative event, they will ask why they are helpless and the causal attributions they make will then determine the generality and chronicity of their helplessness as well as their later self-esteem. These attributions can either include beliefs that the helplessness or the outcome that caused helplessness, is due to something about themselves (an internal attribution), or something about other people or the environment (an external attribution). The model predicts that making external attributions for negative outcomes, buffers people's self-esteem. The attributions made can also be either stable or unstable, something that is persistent (a stable attribution) or something that will change (an unstable attribution). According to the model, people who make unstable attributions will find themselves distressed for less time. Finally, causal attributions can either be global or specific, i.e., will the cause appear in a range of situations (a global attribution), or is it only relevant to one particular event (a specific attribution). In this case the model predicts that people who attribute to specific causes will not show disturbances in as many areas of their lives as those who make global attributions. Overall the model predicts that people who make internal, stable and global attributions for a negative outcome should show worse adjustment. In this context self-blame (an internal attribution), would therefore be related to poorer adjustment. The model further suggests that self-blame in helplessness follows from attributions of failure or other events, to causal factors that are controllable. However, Janoff-Bulman

(1979) pointed out, that the self-blame Abramson and colleagues refer to is concerned with self-esteem deficits and self-criticism and therefore parallels characterological self-blame, which relates to feelings of lack of control. In this manner characterological self-blame is the type of self-blame that applies to self-blame in helplessness and could thus lead to maladjustment. In fact, studies examining the role of helplessness in response to illness, such as rheumatoid arthritis, have found beliefs of helplessness to be related to poorer health outcomes, greater pain, depression and more physical disability (Brown, et al., 1989; Callahan et al., 1988; Nicasso et al., 1993). In light of the studies reviewed earlier, showing self-blame (globally defined) either as related to better or poorer adjustment, the distinction into behavioural versus characterological self-blame would support the predictions made by the model of learned helplessness as regards self-blame.

3.1.9. Characterological versus behavioural self-blame and adjustment to life events.

In order to test the usefulness of the distinction between behavioural and characterological self-blame, Janoff-Bulman (1979) conducted two studies. The first was designed to determine whether characterological self-blame was a characteristic of depressed individuals and whether it co-occurred with decreased personal control beliefs. The second study aimed to identify which type of self-blame, behavioural or characterological, would more accurately characterise the reactions of rape victims attending rape crisis centers. Causal attributions were assessed in the first study by asking participants to read four different scenarios and indicate how much they blamed themselves (as a person or behaviour), other people, the environment and chance, for the situation described. In the second study rape counsellors were asked what percentage of the rape victims they saw, blamed themselves either because of the kind of person they were or because of their own behaviour. Both of these studies supported Janoff-Bulman's two types of self-blame. The first found that depressed individuals engaged in more characterological self-blame than non-depressed individuals, while behavioural self-blame did not differ between the two groups, depressed subjects did also report more attributions to chance and had less believes in personal control. The second study showed that rape victims, as reported by the rape counsellors, were more

likely to respond with behavioural self-blame than characterological self-blame, which as Janoff-Bulman proposed, could show a motivation to maintain control over similar situations in the future.

Another study carried out by Timko and Janoff-Bulman (1985) further assessed the distinction into characterological vs. behavioural self-blame, this time using responses of 42 women who had undergone a mastectomy within 2 years prior to being interviewed. A series of questions concerning causal attributions was presented to each woman. This included asking questions about the extent to which the subject felt other people, the environment and chance were a cause of their cancer. Three items represented self attributions for breast cancer, i.e., to what extent they thought they got cancer because of the kind of person they were physically, because of their personality or because of their past behaviour. Two separate questions assessed to what extent the women thought they could have avoided getting breast cancer and to what extent they thought they personally would be able to avoid a recurrence of cancer. All responses were rated on a 11 point scales, ranging from *not at all* to *completely*. Psychological adjustment was assessed using 3 different measurement tools. The Beck Depression Inventory examining psychological distress. A scale called Emotions, where each woman was asked to indicate to what extent they were experiencing the following: anger, ashamed or embarrassed, displeased with self, happy or serene, optimistic or hopeful, powerful, strong, in control of events, proud, worthy or pleased with self, sad, unhappy or depressed, scared, frightened, worried and anxious. Answers were rated on a 11 point scale with endpoints labelled *not at all experiencing* and *very strongly experiencing.* The third indicator of adjustment was a measure of self-esteem, each woman rated the extent of their self-esteem on a 11 point scale, ranging from *extremely low* to *extremely high.*

The main findings of the study regarding causal attributions, showed that women who made casual attributions to *their own personality and/or to other people were less likely to believe that their mastectomy was successful in removing all the cancer.* Believing that the mastectomy was unsuccessful was related to feeling ashamed, being displeased with oneself, feeling sad and scared. Furthermore, the relationship between behavioural self blame and psychological adjustment was mediated by

perceptions of avoidability of cancer. Future avoidability of cancer was associated with perceived past avoidability and *past avoidability was positively related to behavioural self-blame.* Women who felt they could have avoided the cancer were most likely to relate that to past behaviours, such as having taken the contraceptive pill, not maintained a proper diet or having injured the breast. These women were also more likely to believe that they could avoid recurrence of cancer, they also reported feeling happy and optimistic. Thus, this study supported the distinction into behavioural vs. characterological self-blame in relation to adjustment. Characterological self blame was related to worse psychological adjustment while behavioural self-blame was found to be related to better adjustment mediated by perceived avoidability and its related cognitions.

A number of other studies have been conducted using this distinction into behavioural versus characterological self-blame. For example, in a study by Tennen et al. (1986) examining self-blame among mothers of infants with prenatal complications, behavioural self-blame (assessed by an open ended question with answers content coded into categories) was found to be positively associated with perception of severity of the child's condition and with the belief that one could prevent similar circumstances in the future. Behavioural self-blame was also found to play an indirect role in emotional adaptation through its relation to feelings of control over recurrence.

Affleck et al. (1985) examined a similar topic to the aforementioned study, i.e., mother's beliefs about behavioural causes for the condition of their developmentally disabled infant. Mothers of 57 infants were interviewed on 3 occasions, within 1 month of the infants discharge from hospital and 9 and 18 months later. Causal attributions were assessed by open ended questions and answers were coded independently by two judges into behavioural self-blame, other blame and non behavioural causes. Mothers' mood state, including anxiety, depression, anger, fatigue, vigour and confusion, maternal caretaking perceptions and the quality of the infant's home environment were also examined. The results showed that early behavioural self-blame was related to greater maternal responsiveness and involvement with the child and more effective environmental organisation both at 9 and 18 months.

Another study by Major et al. (1985) examined the role of self - blame, in particular the distinction between characterological self-blame and behavioural self-blame, in predicting coping and depression after abortion. 247 women undergoing a first trimester abortion were interviewed one hour before the abortion and 30 minutes after the abortion. Women (N=99) who returned to the clinic for a 3 week follow-up visit were again surveyed concerning mood, anticipation of negative consequences and depression at that time. Attributions were measured an hour before the abortion, by an 18 factor scale where the participants were asked to indicate the extent to which they blamed each factor for their pregnancy. These factors characterised 5 categories of blame: *self-character, self-behaviour, other people, the situation* and *chance*. All the items were rated on a scales from 1 (*not at all*) to 7 (*totally*). Coping outcome was measured, (an hour before the abortion and at 3 weeks follow up) in terms of *physical complaints* (the degree to which women were experiencing abdominal cramps, nausea, dizziness, pains in the lower back, pains in the legs and headache), *current active state or mood* (the degree to which women were feeling happy-sad, anxious-calm, good-bad, regretful-not regretful, relieved-not relieved, guilty-not guilty, right-wrong, loss-no loss, in control-not in control) and *anticipation of negative consequences* (worry about future side effects from the abortion and the abortion having a bad effect on future sexual experiences). All items were rated in the same way as the causal attributions, on scales from 1 (*not at all*) to 7 (*totally*). Depression was measured both 30 minutes following the abortion and at 3 week follow up, by the Beck Depression Inventory, a self administered scale measuring intensity of depression.

The findings of this study showed that *behavioural-self blame was significantly more prevalent and stronger than other types of blame.* Furthermore, overall internal or self-blame (behaviour plus character) was significantly higher than overall external blame (chance, situation and others). The responses for each coping outcome scale were averaged in order to get an average physical complaint, mood and anticipation score for each subject. Each score could range from 1 (good coping, i.e., no physical complaints, good mood and no anticipation of negative consequences) to 7 (poor coping). The results showed that the majority of women coped very well immediately after the abortion and even better 3 weeks later. When examining the difference between characterological-

self blame and behavioural-self blame and their relationship with coping, the results showed that *women who blamed their pregnancy on their characters coped significantly worse with the abortion than did women who did not blame their characters.* Furthermore, *high characterological self blamers were significantly more depressed, anticipated more severe negative consequences and tended to have more negative moods than low characterological self blamers. High characterological self blamers also tended to continue to cope worse three weeks after the abortion than did low characterological self blamers.* High and low behavioural self blamers however did not differ significantly in their coping responses, either overall or on any specific measure, including depression. These results thus replicated Janoff-Bulman's (1979) finding that characterological self-blame, but not behavioural self-blame, differentiated depressed from non depressed women. These data were also consistent with prior research in showing that external blame is associated with poorer coping (Janoff-Bulman & Wortman, 1977, Janoff-Bulman, 1979). High situation blamers were significantly more depressed than low situation blamers, those who blamed others anticipated more severe negative consequences than those who did not blame others and finally, high chance blamers tended to experience a worse affective state than low chance blamers. These results suggested, as concluded by the authors, that it is important to draw a theoretical distinction between characterological and behavioural self-blame, because the former is maladaptive for coping at least with certain types of negative events, whereas the latter is not and this is contrary to earlier reports where *self-blame* (globally defined) was found to be either maladaptive or adaptive.

Another study also carried out by Mueller and Major (1989), examined 283 women undergoing abortion using the same procedure and methodology as their previous study, replicated their previous findings and showed that low characterological self-blame and low other blame were related to better adjustment.

There are however, other studies which have not been able to replicate these findings, among these is a study carried out by Kiecolt-Glaser and Williams (1987) examining patients with acute burn wounds (this study is described in more detail later in this chapter). They found *behavioural self-blame to be associated with poorer compliance, more pain behaviour*

and greater depression. Behavioural self-blame was also found to be related to greater depression in a study conducted by Meyer and Taylor (1986) examining attributions among rape victims. Thus, it could be concluded that further studies are needed in order to be wholly conclusive when attributing the contradicting results of self-blame (globally defined) to two types of self-blame, i.e., behavioural versus characterological self-blame.

3.1.10. Other blame.

The term other blame, categorised as an external attribution, refers to "***the belief that another person is the cause of one's victimisation or is in some way responsible or blameworthy for an untoward outcome***" (Tennen & Affleck, 1990, p. 209). In a review paper on this subject, Tennen and Affleck (1990) pointed out that although one of the most consistent findings in this literature has shown that blaming someone else is related to physical impairment and emotional distress, this factor has received the least attention. Much more attention has focused on self-blame despite inconsistent findings. In their paper Tennen and Affleck reviewed 25 published studies which had measured attributions to others and adjustment outcomes among people who had experienced a major life event. A variety of studies were reviewed, including individuals (children and adults) who had experienced both acute aversive events and chronic conditions, such as mothers of seriously ill infants, patients with MI, children with insulin-dependent diabetes, people with rheumatoid arthritis, men and women with cancer, accident victims, women having an abortion, women who had experienced a miscarriage, people with infertility problems, rape victims, school children who had experienced a lightning-strike disaster, fire victims and young adults who had recently lost a parent. Overall, the studies had sampled responses from people who had experienced a wide range of stressful and life-threatening situations.

Causal attributions were mostly measured by content coding responses to open ended questions, rating scales or both of these. None of the studies examined spontaneous attributions, therefore as Tennen and Affleck pointed out, there was no way of knowing if the attributions individuals made were a result of a prior causal search or were produced by investigators inquiries. Adjustment and outcome was assessed in a

variety of ways, including psychological adjustment as reported by the victim and/or by health care professionals or observers. Measures of health outcomes were also included, assessing disease control, length of stay in hospital or complications during hospitalisation, re-hospitalisation and self-reports of physical complaints and symptoms.

The overall results from these studies showed that in 22 studies participants did perceive another person as a cause and in 17 of these, blaming others was associated with less positive adaptation. Other-blame was in none of these studies found to be related to more positive adjustment. Among the 5 studies which did not find an association between other-blame and adjustment, 4 found no association between any attribution and adjustment and 1 study did not report direct correlations between other-blame and adjustment, only a regression statement which said that other-blame did not make a unique contribution to adjustment. Apart from these 5 studies the overall findings did show a strong pattern towards other-blame being consistently related to poorer adjustment.

As a result of this review Tennen and Affleck proposed that this pattern demanded an adequate conceptual framework. They then went on to search for relevant explanations for these results. The first of these is derived from the psycho-dynamic literature which according to Tennen and Affleck can be understood as variations on a single theme, i.e., people who blame others for their misfortune are considered in some way as less mature. Their explanation for the event comes from their pre-existing immaturity rather than from the event itself. These theories explain the association between blaming others and poor adjustment, either as a result of other people not accepting it, as a developmental deficit or as an immature defence, such as projection which leads to maladjustment. The studies reviewed by Tennen and Affleck however did not include any measurement to test psychoanalytic hypothesis and therefore one can not conclude that they apply as explanations for these study results.

The second explanation for these results, Tennen and Affleck took from two social psychology models: learned helplessness and excuse making. The model of learned helplessness would predict, as mentioned earlier, that people who make external, unstable and specific attributions for a negative outcome should show better adjustment. The model does

however, include other-blame as a part of external attributions and as Tennen and Affleck pointed out, could therefore not explain the majority of the research findings. Excuse theory, put forward by Snyder and colleagues (see Tennen & Affleck, 1990), suggests that people try to distance themselves as responsible for a negative outcome and they therefore shift causal attributions from themselves to others, i.e. externalise the cause. This theory does predict other-blame to be related to maladjustment this is because even though they see themselves as unlinked to the outcome they are still faced with a negative outcome. Excuse makers must eventually face those whom they blame and therefore the benefits of unlinking oneself from the causes are lost and result in poorer adjustment.

Tennen and Affleck's point of view is that all of these models and theories capture a part of the mechanism that relates other-blame to poor adjustment. Nevertheless, they suggest that one must go further and take into account at least four aspects of a threatening or negative event which could influence whether another person is blamed. These include: the presence of another person at the time of the event, the authority, knowledge and ability of the other person, the nature of the relationship between the victim and the other person and finally the severity of the outcome. Taken together the aspects of this idea has found support in the literature (Janoff-Bulman & Wortman, 1977; Kiecolt-Glaser & Williams, 1987). There is for example, little evidence for other-blame as a response to chronic illness. This could partly have to do with the fact that with chronic illness people are less likely to have a set starting point which they can link to another person. Nevertheless, other-blame is worth examining as a response to illness as evidence shows that it is linked with poorer recovery and adjustment in those who engage in such attributions (Affleck et al., 1987; Taylor, et al., 1984).

Tennen and Affleck also predicted that blaming others might interfere with adaptive coping strategies. They suggested firstly, that thinking of someone to blame might distract an individual from planful problem solving. Secondly, that other-blame might affect seeking social support if the person who is being blamed is also the potential provider of support. Thirdly, that coping by acceptance would be made impossible as it is contradictory to other-blame. Finally, they suggested that coping by

positive reappraisal might be difficult when the negative event is attributed to another person. Thus, they hypothesised that blaming others would restrict the range of coping strategies available.

3.1.11. Causal attribution assessment.

Subjects in a typical attribution study are asked to complete rating scales or provide open ended explanations for events presented in a scenario form. A subject might for example, be asked to imagine what causal attributions they would make to account for a hypothetical success or failure (DuCette and Keane, 1984). Much of the earlier research asked subjects to respond to hypothetical situations by indicating how certain factors (e.g. luck, effort or ability) might account for the success or failure described. The bulk of this research used college students in academic situations. When assessing attributions following real life experiences the same kind of methodology has been used, relying mostly on rating scales, where subjects are given a list of items to choose from, open-ended questions about causality and spontaneous attributional reports have also been used (Turnquist, et al., 1988). Rating scales allow easier quantification of attributions. They however limit the subject's choices to pre-structured items which may also increase demand effects. Open ended questions on the other hand, allow the subject to freely generate causes and do not lead to any demand effects. Responses, to both rating scales and open ended questions, are then either coded by at least two independent judges into categories, such as internal, external, self-blame (behavioural versus characterological), other-blame etc., or factor analysed in order to produce statistically consistent categories.

It is however, important to use consistent methodology across different studies to avoid obscuring consistent trends in causal attributions which might result from using different coding procedures. Researchers (Turnquist et al., 1988) have also pointed out that the wording of cues used to assess attributions could have an effect on the responses given, cues such as "Why", "Why me" and "Why do I have this outcome". These wordings may reflect different constructs and therefore touch on different mediators with adjustment. For example, a response to "Why" would most likely reflect causes about the illness/event itself and possibly ideas about perceived controllability. A question of "Why me" would however, focus

on the specificity of the illness/event to the individual and beliefs about justice. Another area which Turnquist and colleagues (1988) mention and might lead to inconsistency in attributional inquiries is the probing following open ended-questions. While some investigators would settle for one response others might continue probing the subject which would then lead to inconsistent results. In their review on attributional assessment Turnquist et al. (1988) concluded that bearing these shortcomings in mind, it is not surprising that strong effects and consistent findings have not been found in the literature on attributions and adjustment to life events, such as illness. However, the solution to these problems could lie in using more than one method, including assessment of spontaneous attributions, open-ended questions and rating scales.

Other researchers (Brickman, et al. 1975) have criticised typical causal attribution assessment for not recognising that causes interact with one another, that they do not operate in isolation. For example, imagine an accident where a car hits a lamppost. This accident might have been caused by a failure in the car, which was caused be the driver not having the car examined which in turn was caused by the previous owner of the car who led the new owner to believe that the car had recently been examined. Brickman et al. (1975) proposed that "***if information about more than one cause is available, the interpretation of any particular cause may be strongly affected by the chain of events in which it embedded***" (Brickman, et al., 1975, p. 1060). A study carried out by Blumhagen (1980), examining 103 women suffering from hypertension found support for the importance of this idea in identifying causes for a medical condition. Causes were seen not to operate in isolation but one led to another and resulted in a variety of outcomes. Furthermore, Norman (1991) has pointed out the importance of assessing causal chains in medical populations, such as in patients with MI or other heart conditions. He referred to the evidence which suggests that the causes for heart disease do not operate in isolation, instead they interact with each other, such as eating fatty food which leads to high levels of cholesterol. In a study assessing university students beliefs about the causes for coronary heart disease (CHD), Norman (1991) demonstrated that these students were able to identify the link between different causes. He then proposed that examining causal attributions among CHD patients might highlight certain areas which health education professionals could address and more

importantly assessing patients' knowledge about the link between different causes could improve strategies to encourage the adoption of new risk reducing behaviours. As an example, Norman referred to a smoker who wishes to stop smoking. By using the structure of examining causal chains in the smoker's causal attributions, Norman suggested that it could be possible to identify what caused the smoking. For example, the individual might smoke to relieve stress which in turn is caused by demands at work. Thus, smoking is not an isolated behaviour, it has both causes and effects. Therefore the aim of the health counsellor would be to identify these and provide alternative coping strategies.

The importance of examining causal attributions over time has also been recognised (Wong & Weiner, 1981; Blumhagen, 1980), but there is a lack of longitudinal studies in this area. The ones which have been carried out have however, shown that causal attributions tend to change over time (Burgess & Hartman, 1986) and predict subsequent adjustment (Affleck et al., 1987).

Taking into account the existing methodological criticism outlined above, the study presented here attempted to use multiple methods in assessing causal attributions. This included assessment of spontaneous attributions, open ended questions about causality, rating scales and examination of causal chains on 4 different occasions over a period of 1 year.

3.2. Causal attributions and illness.

3.2.1. Causal attributions and adjustment to illness.

As the previous introduction has pointed out, research has revealed that patients' emotional reactions to their illness are closely related to the attributions they hold. This section reviews studies which have examined causal attributions and adjustment to illness. These studies include patients with cancer, spinal cord injury, serious burn wounds and a special section on patients with MI. The reason for selecting these particular studies resides in the fact that they are the main areas which have been examined with regard to causal attributions following serious illness. Furthermore, as one of the aims of the present study was to examine self-blame, this review also includes a specific section on self-blame and adjustment.

Patients often blame themselves unnecessarily for diseases over which they have had little control (Taylor, 1983) but, just as often, they do not take responsibility for its cause which might involve life-style changes that would make some illnesses relatively preventable. For example, a study carried out by Linn et al. (1982) showed that terminally ill pulmonary cancer patients were significantly less likely to attribute their illness to smoking than non-cancer patients. The main purpose of Linn's et al. study was to generally describe what patients with different types of late-stage cancer (terminally ill) thought about the aetiology of cancer and to compare their beliefs with other patients who did not have cancer. Patients' beliefs about causes of cancer were measured with a 10 item scale covering the following areas: smoking, drinking, diet, inheritance, type of occupation, stress, medicines, water, environment, God's will and other (anything the person wished to add). The answers were rated on a 4 point scale, ranging from having no influence on the development of cancer to having a strong influence. The results including the aforementioned one, showed that cancer patients had significantly lower scores on all the 10 items indicating that they did not have as strong beliefs as others that any of the factors on the scale were related to development of cancer. Cancer patients were however, significantly more willing to attribute the disease to the will of God or to genetic factors, whereas the non-cancer patients listed environmental factors or diet. Bearing in mind that these cancer patients were all terminally ill, these results could mean as attribution theory suggests, that people would be likely to attribute to external factors if they feel they have little or no control over the situation. However, contradictory to this previous finding, when type of cancer was correlated with causal beliefs, lung cancer patients tended to believe that smoking was a factor and stomach cancer patients believed alcohol and diet were associated with cancer. The patients holding these causal attributions could simply have been better informed about the causes of their cancer or else they might have believed in being able to control these factors which could have given them something to hold on to rather than having to face the ultimate end.

Attribution theory emphasises the importance of feelings of control over an event (Kelley, 1967). This has indeed been shown to have an effect on recovery from illness, for example, Frank et al. (1987) when studying 53

persons with spinal cord injury found that those individuals who relied mostly on internal attributions of beliefs, i.e. indicating strong feelings of responsibility for their health, were better adjusted. The Multidimensional Health Locus of Control (MHLC) 18 item self report measure including 3 scales, internality, powerful others and chance, was used to assess feelings and beliefs of control. Individuals who scored high on this scale were found to rely less on coping factors, as measured by the WCQ, and showed evidence of less emotional distress, measured by the Beck Depression Inventory (BDI).

3.2.2. Self-blame and adjustment to illness.

Attributions are thought to be made so that individuals feel that they can control their environment (Heider, 1958, Kelley, 1967), as a result of that attributions made to factors which are under personal control are predicted to be more adaptive than attributions made to uncontrollable factors. Attributions including self-blame are of a particular importance in this respect as they are proposed to be closely connected with feelings of control, in particular when one blames their own behaviour. Blaming oneself for a negative event is predicted to enhance feelings of control and therefore the world seems more modifiable and predictable, which in turn should lead to better adjustment (Janoff-Bulman, 1979). This has been a subject of a number of studies within the illness -attribution literature.

The study carried out by Janoff-Bulman and Wortman (1977) is one of the earlier and much referred to study examining the relationship between causal attributions, self-blame in particular, and adjustment to a chronic condition. The general purpose of this study was to assess the relationship between attributions of causality and coping in 29 individuals with spinal cord injury. The participants were either paraplegics or quadriplegics as a result of an accident which occurred either 1 - 4 months or 8 - 12 months prior to the interview. The mean age of the injured individuals was 27 years, ranging from 16 to 35 years and the majority were males (23 males and 6 females). All interviews were carried out in the hospital and included a measure of feelings of control using the Internal-External scale developed by Rotter (1966), the Just World scale (Rubin & Peplau, 1975) and a religious attitude scale (Poppleton & Pilkington, 1963). Causal attributions were assessed by asking each person about the percentage of

self-blame for the accident, percentage of blame to others, to environmental factors and to chance. The amount of perceived avoidability was assessed by an open question asking "To what extent do you believe you could have avoided what happened", answers were rated on a scale from 1 "not at all" to 5 "completely". The respondents were also asked whether they had ever asked the question "Why me?" and if they had done so they were asked to indicate how they had answered it. Finally, how the patient was coping with their disability was assessed by asking the social worker assigned to each patient and one nurse who knew the patients well to rate him or her on a 16 point scale with 1 "coped very poorly" and 16 "coped extremely well". Prior to the study 20 social workers and nurses were asked how they would define good and poor coping. The following definition was provided with considerable agreement: Patients who were thought to be coping well were described as those who had accepted the reality of their injury and were attempting to deal positively with the paralysis. Furthermore, patients who had a positive attitude toward physical therapy, who were motivated to work towards improvement of their physical abilities and those who showed a desire to be as physically independent as possible were also thought to be coping well. Patients were thought to be coping poorly if they denied the extent of their injuries despite medical evidence to the contrary, if they denied how much had to be done for rehabilitation and/or were expecting to get better miraculously, and finally if they showed no interest in improving their condition and/or showed no interest in attending physical therapy sessions.

The results from this study showed that individuals were *most likely to blame themselves if they thought they could have avoided the accident, if there were no others involved and if they were very religious.* Time since the accident happened seemed to have some effect on attributions with respondents placing more blame on environmental factors if longer time had passed. Circumstances of the accident also seemed to have an effect on attributions, *if another person had been involved other blame was more likely to occur.* When examining the relationship between causal attributions and coping outcome, the results revealed that *the more the patients blamed another and/or the more they thought they could have avoided the accident the worse they coped. Blaming oneself was however, related to better coping outcome.* These results were however,

a bit surprising as the authors pointed out, in light of the fact that feeling that one could have avoided the accident was positively correlated to self-blame but negatively related to good coping outcome, while self-blame and good coping outcome were positively related. In order to examine this further the authors used a median split to divide the subjects into categories of either high or low feelings of self-blame and high or low feelings of perceived avoidability. These analysis showed that *those respondents who blamed themselves and who did not feel that they could have avoided the accident were more likely to be good copers than bad copers.* On the other hand those who placed *little blame on themselves and felt that they could have avoided the accident were more likely to be poor copers than good copers.* In an attempt to explain this finding the authors pointed out that many respondents seemed to distinguish between whether the activity they were engaged in at the time of the accident was a common or an unusual activity. If the activity was a common one, something they used to do a lot of the time for example swimming, they were more likely to think of it as unavoidable, whereas if it was an unusual activity for them something they had just done on that particular occasion they were more likely to see it as avoidable. In both these cases the individual might engage in self-blame however, when self blame was related to an unavoidable incident they intended to cope more successfully.

Other results from this study showed that *all respondents said they had posed the question "Why me" and all but one had been able to come up with an answer.* The reasons they gave fell into 6 categories of: predetermination, probability, chance, God had a reason, deservedness and revaluation of the event as positive. The last category was highly correlated with self-blame. The one individual who did ask "Why me" but could not come up with an answer, was among the individuals who coped worst with their condition. From these results Janoff-Bulman and Wortman concluded that what may be important is ascribing meaning to the accident or event in a manner that proves satisfying to the individual. The study found little evidence for the idea that people are motivated to avoid blame, as the defensive attribution hypothesis would predict, in general the individuals were willing to attribute blame to themselves even beyond what objective circumstances would have warranted. The idea of just world did however, gain some support in this study with most patients blaming themselves and those who did blame others showing poorer

coping, which could indicate feelings of unjust. Finally, the idea that one is motivated to view negative outcome as the result of modifiable or avoidable factors in order to be able to prevent them happening again, was not supported in this study. The authors concluded that the result that perceived avoidability was negatively correlated with successful coping, suggested that although feelings of control may generally be adaptive, they could be maladaptive when the individual faces a permanent, non modifiable outcome. This supports the view put forward by Turnquist and colleagues (1988) mentioned earlier about feelings of personal control and being related to the circumstances and the implications of the negative event.

A study by Taylor et al (1984) interviewed 179 patients with breast cancer, examining attributions for cancer and beliefs about control over cancer and their relation to adjustment. The authors predicted that the majority of patients would make causal attributions and that attributions would be made early in the adjustment process, around the time of diagnosis and finally that cancer patients who believed they had control over their cancer would show better psychological adjustment than those who did not hold such beliefs. Causal attributions were assessed by an open ended question asking about ideas for the causes of the illness and by a list of 22 items that might be considered as potential causes of breast cancer such as, stress, heredity, diet, ethnicity, God's will, a blow to the breast etc. The patient rated their answers on a 4 point scale of 1 "not at all important" to 4 "very important". Patients were then asked to rate the causal responsibility of *self*, some other person, the environment and chance for their cancer, this was rated on a 5 point scale. Questions about why the patient had developed ideas of causes and when it had been developed were also included. Feelings of control were assessed by 4 open ended questions and 9 items from the Rotter Internal-External Locus of Control Scale. Measures of adjustment included, Global Adjustment to Illness Scale (GAIS) as rated by the physician, the interviewer and the patient, the patient's self report of current psychological distress (anxiety, fear, depression and anger), Multivariate Health Locus of Control Scale, the Profile of Mood States (POMS), Self-Esteem Scale, Index of Well Being and a Scale of Marital Adjustment. In order to create an overall measure of adjustment these scales were factor analysed and quartimax rotated. This gave one factor which accounted for 76% of the variance,

this included the physicians' and the interviewers' GAIS scores, the patients' self rating of adjustment and their summed report on psychological distress, the Index of Well Being Score and the total score on the POMS. These scores were combined and standardised for each subject and were used as a global measure of adjustment. The results showed that *90% of patients had a causal attribution for their cancer. Only 28% of the sample said that the question of cause was important at the time of diagnosis however, 41% indicated that it was an important issue during recovery and 41% said it was important to them at the time of the study.* This suggests contradictory to attribution theory, that the cause for the cancer may not be an important issue early in the adjustment process but may become so later on.

These results should however, as suggested by the authors, be interpreted with caution as they are patients' retrospections. A possible explanation for this pattern as given by the authors is that early on in the cancer the patients' time and attention is occupied with details of medical care and by emotional reactions such as fear and denial, this time must pass before there is time to engage in causal attribution search. This however, is a surprising result as the authors point out as attribution theorists emphasis the importance of causal attributions as essential in order to understand, explain and control an aversive event. Further results showed that *no particular attributions were related to good adjustment and attributions of responsibility to the self, the environment or chance showed no relationship with adjustment.* Only *other blame was significantly related to poor adjustment.*

This study also sought to resolve the contradictory prediction regarding self-blame, i.e., whether such attributions were associated with good or poor adjustment. Self-blame was not found to be related to adjustment at all and therefore did not support Janoff-Bulman and Wortman's findings. However, self-blame was only measured in a global way, it was not divided into the two kinds of self-blame suggested by Janoff-Bulman, i.e., characterological self-blame and behavioural self-blame, doing so might have revealed different results.

The authors suggest two possible explanations for why causal attributions were found to be unrelated to adjustment in this sample. Firstly, the

importance of attributions might have been overshadowed by background factors such as religious beliefs and knowledge about cancer. Secondly, the attributions might not have served the need they are thought to serve, i.e., making the event feel more controllable, predictable and understandable, other cognitive factors might possibly have served those needs. This latter explanation becomes likely when one looks at the relationship between beliefs in psychological control and adjustment. This showed a strong association, control beliefs and attributions were however, unrelated. The overall conclusion the authors drew from this study was that attributions were not functionally important for the adjustment of this cancer population, which contradicts most theories of attributions. The authors further suggested that distinguishing between events which are ongoing (chronic) versus those that are not may clarify when attributions do or do not have a functional purpose and significance.

In another paper referring to the same cancer population, Taylor (1983), emphasised the importance of *search for meaning* in the event and pointed out that meaning is exemplified by, but not exclusively determined by the results of an attributional search, which aims to answer the question "What caused the event to happen?" As mentioned earlier 90% of the patients in this particular study made attributions for their cancer. Taylor argues, that this high frequency of making attributions, tied with the fact that no specific attribution was related to better adjustment, suggests that causal meaning is the goal of the attributional search rather than the particular pathway through which it is realised. She goes on to say that the search for meaning involves not only why the event happened but also what its implications for one's life is and will be in the future. The study results pointed towards this explanation, with those patients who constructed positive meaning from the cancer experience showing significantly better psychological adjustment than those who did not.

A study by Schulz and Decker (1985) examined how *self-blame* and perceived avoidability was related to adjustment in a sample of 100 individuals with spinal cord injury. One of the aims of this study was to compare the findings with the data reported by Janoff-Bulman and Wortman (1977). The subjects in the study were all over the age of 40 and had been either paraplegic or quadriplegic on average for 20 years. Six major categories of data were collected for the study, this included

demographic data, health status, social network/support, social comparisons, control/attributions and subjective well-being. Three standardised instruments were used to assess psychological well being, depression and life satisfaction, these were the Index of Psychological Well-Being (IPWB) an 8 item self report scale designed to measure mental health in adults, the Life Satisfaction Index-A (LISA-A), an 18 item self report scale designed to measure subjective psychological well-being and the Center for Epidemiological Studies-Depression Scale (CES-D) a 20 item self report scale designed to measure symptoms of depression in the general population. Perceived control was measured by a 5 item Likert-type scale with response possibilities ranging from 1 "not at all" to 5 "completely". Each individual indicated the degree of control they felt they had to "achieve or obtain what is most important to you", "make your interactions with others end up the way you expect them to", "cope successfully when stressed", "solve problems" and "view the good things that happen to you as a result of your own actions". Causal attributions were measured by asking the subjects what factor(s) they blamed for the disability, subjects were also asked whether they felt they could have avoided incurring the disability.

The results showed a general *high level of perceived control which was however unrelated to causal attributions* made. The main results of this study regarding self-blame and adjustment showed that *subjects who blamed themselves for their disability and who felt they could have avoided it reported higher levels of well-being.* Furthermore, self-blame and coping (as measured in life satisfaction) were highly related. These results did however, contradict Janoff-Bulman and Wortman's findings, their study found that victims who coped best blamed themselves but at the same time felt that the injury was unavoidable. What Schulz and Decker found was on the other hand, that *better copers blamed themselves and felt that the disability was avoidable*, they indeed found that self-blame and perceived avoidability were highly correlated. However, there are as Schulz and Decker pointed out, a number of differences between those two studies. The age difference in the subjects is wide, in Janoff-Bulman and Wortman study the subjects were young and had been injured within the last 12 months whereas Schulz and Decker's subjects were much older and had lived with their disability on average for 20 years. All the subjects in Janoff-Bulman and Wortman's study had been injured in accidents but a

number of individuals in Schulz and Decker's study were the victims of diseases such as polio. Another main difference between the studies was the outcome measures used, Janoff-Bulman and Wortman assessed coping and adjustment based on subjects' attitudes towards their injury and how motivated they were to participate in physical therapy. Schulz and Decker on the other had used standardised instruments particularly designed to examine well-being and depression. The last obvious difference between those two studies is the sample size, Janoff-Bulman and Wortman interviewed 29 individuals with spinal cord injury whereas Schulz and Decker interviewed 100. All of these differences, or even just one, could account for the differences in outcomes found between those two studies.

Another study carried out by Kiecolt-Glaser and Williams (1987) also made comparisons with Janoff-Bulman and Wortman's (1977) study. This study addressed self-blame and adaptation in 49 patients hospitalised for treatment of acute burn wounds. Self-blame and perceived avoidability were measured by using the interview items described by Janoff-Bulman and Wortman (1977). First the patients completed a scale where they answered questions about the extent of self-blame, then they were asked to indicate the percentage of blame they attributed to themselves, others, the environment and chance. In addition, in order to operationalise characterological versus behavioural self-blame the patients completed a 10 point scale, with 1 being "I am the type of person who has bad things happen to them" and 10 "I chose the wrong thing to do in this particular situation". Adjustment was assessed by asking the nurses and physical therapists to rate the extent to which the patient actively participated in their therapeutic activities. This was rated on a scale from 1 "refuses to comply with even routine requests" to 7 "complete compliance with all requests". The Brief Symptom Inventory was used to assess anxiety and depression, feelings of control over health were assessed by the Multidimensional Health Locus of Control including three scales; internality, chance and powerful others, patients' religious beliefs were also assessed. Finally the Just World Scale was used to measure to what extend the patients agreed or disagreed with the idea that the world is just. This scale was included to provide information on the relationship between assignment of blame for the accident and beliefs that people get what they deserve.

The results showed that *virtually all subjects who blamed themselves for the accident engaged in behavioural rather than characterological self-blame.* Behavioural self-blame has been suggested to have positive effects on adjustment (Janoff-Bulman, 1979), the results of this study did however, not show this kind of affect, on the contrary *greater behavioural self-blame was found to be related to poorer compliance with nurses, more pain behaviour and greater depression.* This study therefore suggested that behavioural self-blame is not adaptive in acutely burned adults, furthermore, it contradicted Janoff-Bulman and Wortman's (1977) findings where self-blame in individuals with spinal cord injury was found to be related to better adjustment. Other results showed that *patients who felt the accident could have been avoided were more likely to blame themselves, patients who had stronger believes in a just world were also more likely to blame themselves* and tended to rate the accident as more positive on the best-worst thing that could have happened to them. Finally, the *majority of patients said they had never asked the question "Why me",* which is another result contradicting Janoff-Bulman and Wortman's findings.

Frey and colleagues (1985), in a study of 64 male recent accident victims found similar results to Kiecolt-Glaser and Williams (1987). They studied patients including a range of different accidents, such as traffic accident (42%), occupational accident (22%), sports accidents (15.6%), accident at home (17%) and other accidents (3%). The patients had a variety of injuries, ranging from slight injury (swelling, torn muscles etc.), to badly injured, danger of loss of life, (e.g., wounds with dangerous bleeding, severe brain concussions, spinal cord injuries etc.), no patient was paralysed. Data collection for the study was carried out during the patient's hospital stay. Questionnaires were administered in group sessions, including all 64 participants. A questionnaire was designed addressing cognitions about the accident and convalescence. Assessment of causal attributions was carried out by asking each patient how much they thought each of the following factors were responsible for the accident: chance, fate, themselves and others. All answers were rated on a 5 point scale, where 1 = not at all responsible and 5 = very responsible. Patients were also asked to rate whether they thought the accident could have been avoided using a response scale ranging from 1=definitely no to 5=definitely yes. Concerning convalescence two factors were assessed:

the responsibility of the patient's own will and the conceived predictability of convalescence. Twelve different aspects of the recovery process were evaluated on the convalescence measure. These included, number and degree of complications during hospital stay, length of hospital stay, ward doctor's rating of the healing process, ward nurse's ratings of the healing process, of the psychic well-being, of the psychic adjustment to the injury, to the hospital and of the patient's desire for an increase in the prescribed dosage of medicine and finally the patient's own rating of his/her physical and psychic well-being, of sleeping disturbances and of indigestion. Each of these processes were rated between 1 = high convalescence and 5 = low convalescence and in order to provide a single convalescence score, individual item scores were added together.

The results from this study showed that those who believed that the accident could not have been prevented recovered better than those who thought that prevention could have been possible. Those who strongly believed that the accident was caused by chance and/or fate recovered better than those who did not and *patients who held themselves responsible for the accident recovered worse than those who were less ready to take responsibility themselves.* Furthermore, patients who thought that will power was important for convalescence recovered better and patients who had a high degree of predictability about the course of convalescence recovered better than those who had little predictability. In their discussion Frey and colleagues compare their results to Janoff-Bulman and Wortman's findings (1977). It is evident, as the authors pointed out, that the finding that patients who held themselves responsible for the accident recovered worse contradicted Janoff-Bulman and Wortman's findings. Frey et al argue that these results could be explained by the type of injury. In their study none of the patients were paralysed whereas in Janoff-Bulman and Wortman's study all victims were paralysed and the injury could not be improved at all. Frey et al. pointed out that in their sample all of the injuries could improve and therefore the patient's goal was to regain the health they had prior to the accident. Thus, these patients did not need to have retrospective control over the event, it was more important to them to gain present and future control by making internal attributions about the future course of their recovery. Furthermore, the adjustment process in Janoff-Bulman and Wortman's study was already well advanced, while in Frey et al's study interviews

took place only a few days following the accident. Frey and colleagues pointed out that this fact could be crucial, as it might be possible that with the passage of time the directions of causal attributions could change.

Another study carried out by Nielson and MacDonald (1988) showed, like the previous two, that self blame was related to poorer adjustment. This study examined attributions and adjustment in 58 individuals with spinal cord injury, 54.5% were paraplegic and 45.5% quadriplegic. Respondents were either administered the questionnaires directly by a researcher or received them through mail and were given instructions over the phone. Causal attributions were assessed by the same interview items used by Janoff-Bulman and Wortman, examining the extent to which respondents blamed themselves, others, their environment and chance for their injury. Other instruments included, the Beck Depression Inventory, the Millon Behavioural Health Inventory (MBHI), assessing general coping style variables (which particular variables was however not presented) and the individuals perceptions of psychological stressors, the Multiple Affect Adjective Checklist (MAACL), including 10 anxiety items, 24 depression items and 14 hostility items and the Social Support Questionnaire, identifying individuals who gave support to the respondent and assessing satisfaction with support received. Based on a median split on the self blame ratings, respondents were divided into high vs. low self blamers.

Results showed that low self-blamers attributed their injury significantly more to chance than high self-blamers. High self-blamers were found to be more anxious, experienced greater feelings of hostility and obtained higher depression scores than low self-blamers. Finally, perceived avoidability was associated with poorer adjustment as assessed by the MBHI. These findings thus suggested that those individuals who attributed their spinal cord injury to themselves showed poorer adjustment than those who attributed to external factors, such as chance. These results therefore contradicted Janoff-Bulman and Wortman's (1977) findings. They did however replicate the findings of both Janoff-Bulman and Wortman and Schulz and Decker (1985), with regard to believing that one could have avoided the accident being related to worse outcome. These studies, although using the same attribution measure, did as Neilson and MacDonald pointed out, use different types of outcome measures, such as in their way of assessing coping, standardised measures (Schulz &

Decker, 1985; Nielson & MacDonald, 1988) versus subjective rating by caregivers (Janoff-Bulman & Wortman, 1977). These different assessment tools could account for the different findings generated by the studies. Also the kind of sample used by Nielson and MacDonald could account for these result differences. All their subjects, like those in Schulz and Decker's study, had lived with their injury for number of years, whereas the participants in Janoff-Bulman and Wortman's study had only been disabled either between 1 and 4 months or between 8 and 12 months. Like Frey and his colleagues (1985) argued before, Nielson and MacDonald also suggested that the self-blame/adjustment relationship might be mediated by time. However, given the results of those four studies, self-blame would have to start of as maladaptive just following an accident (Frey et al. 1985), then become adaptive from 1 up to 12 months (Janoff-Bulman and Wortman, 1977), but get maladaptive again somewhere on the way to 7.5 years following injury (Nielson & MacDonald, 1988). Schulz and Decker's study (1985) however did find self blame to be related to better adjustment when assessed 20 years following injury, contradicting Nielson and MacDonald's findings. None of these studies however, divided self-blame into behavioural vs. characterological self-blame which might have shed some light on these contradicting results. In order to clarify this point, one would however need a longitudinal study where by the process of self-blame, both behavioural and characterological, could be assessed from the time of illness/injury onset and repeatedly over a number of subsequent occasions.

Keeping with self-blame and its relationship with outcome assessment, the final study to be reviewed in this section is a study by Witenberg and colleagues (1983) investigating the relationship between patient's perceptions of control and causality and staff ratings of coping and compliance. The patients in this study were 43 individuals undergoing regular chronic hemodialysis treatment and had been doing so for at least 1 month prior to being interviewed. They were administered a semi-structured interview designed by the investigators. The interview explored by open ended questions, patients causal attributions, their perceptions of control and sense of responsibility for the progression of the disease. In addition, in order to examine whether search of meaning had been carried out, each patient was asked if they had ever wondered "Why me". Responses to the interview were tape recorded and then scored on a 7

point Likert scale by two independent raters who were blind to the purpose of the study. Two standardised questionnaires were also administered, the Marlowe Crowne Social Desirability Scale (MCSDS) to examine whether patients were trying to present themselves in a social desirable way and the Internal - External Locus of Control Scale (I-E), to assess what patients saw in control over the illness, themselves or something else. Coping and compliance were assessed by asking staff to rate what they identified as good and poor copers. Good copers where defined as those who tried to maintain a lifestyle as close to their pre-dialysis life as possible but who also accepted the limitations and requirements of the disease, maintained compliance with treatment regimen and did not show signs of depression or low mood. Poor copers were those who showed signs of the above. The findings of this study showed that better compliance was associated with never having thought about blame. Attributing the illness to *heredity was related to better coping and with better compliance.* Self-blame was not significantly related to good adjustment, on the contrary *self-blame showed a tendency to be related to poor coping.* Finally, *patients who had been unable to identify any cause for their illness yet had thought about it, were rated as coping and complying poorly.*

3.3. Causal attributions and Myocardial Infarction.

3.3.1. Causal attributions and adjustment to MI.

As was pointed out in chapter one of this thesis, myocardial infarction is a leading cause of death in Western Societies today and therefore has long been a major concern for health officials and practitioners as well as for laymen. Many beliefs and theories have been mentioned concerning the aetiology of the disease. The most prominent of these theories have come from researchers in biomedicine which have identified a number of risk factors that appear to be linked with heart disease, including smoking, diet, obesity and drinking. These theories as well as other beliefs could, and most likely will, influence cardiac patients in their attempt to explain what caused their illness. Nevertheless, despite the prevalence of this disease very few empirical studies as yet have been carried out in order to examine the nature of heart patients' own aetiology beliefs. However, as the following literature review will show, existing empirical data in this field

has highlighted the importance of causal attributions made by cardiac patients themselves in their recovery and adjustment process. It has also become evident that patients' causal attributions may differ from aetiology beliefs and perceptions held by health professionals. Thus, patients' perceptions and causal beliefs may be important components in their medical and rehabilitation progress.

One of the earlier studies in this area was a descriptive study carried out by Cowie (1976). He interviewed 27 patients diagnosed with a first MI a few days before their discharge from hospital, which was approximately 3 weeks after admission. The aim of the study was to illustrate how the patients used information about their MI, in particular possible causal explanations, to reinterpret their individual biography in such a way that they were satisfied that the causal factors fitted in their case. In order to maximise the patient's opportunity to describe their experience, the interviews were mainly based on open ended questions, such as "Why are you in hospital?" and "Have you any ideas why it (the MI) happened?" The general findings of this study showed that the *majority of patients assumed that their illness was not a sudden unanticipated event, but something which could be seen to have causal antecedents, including strain, tension and overwork.* Some of these causal attributions and perceptions were articulated as a result of patients talking and comparing ideas with each other and to their doctors and in that way getting feedback of what counted as appropriate causes. When a patient discovered several of these in his own biography their MI was made more intelligible. However, a number of patients could not reconstruct their past unambiguously or with reference to these causes, which resulted in them claiming not to understand how or why they had an MI. *Comparing themselves to other patients, with reference to age, number of MI's, symptoms and medical progress enabled patients to eliminate certain causes and get a more comprehensive picture of their illness. The findings of this study thus clearly showed that engaging in causal search following an MI made the event more intelligible and comprehensible for these patients.* As suggested by Naea de Valle and Norman (1992), these results could be of considerable importance if one were to establish a link between causal attributions and behaviour or lifestyle changes following MI. If patients' causal attributions actually came from medical professionals, as Cowie's results seemed to imply, and therefore are likely

to include a range of behavioural factors, such as smoking, diet, exercise etc., one could speculate that these beliefs could lead to favourable changes which in turn resulted in preventing further problems.

Although limited, especially with regard to methodology, explorative research like the above, is valuable in generating ideas and hypothesis for future research. Another such study was carried out by Meyer (1983), where he used a qualitative design in order to examine the experiences and reactions among individuals following an MI. The participants in the study were 30 middle class Caucasian males which were all registered rehabilitation clients between the ages of 27 and 85. An hour long interview was carried out with each participant, using open ended questions covering a number of illness related areas including patients' causal explanations. The study findings showed that younger patients were most likely to attribute their illness to *family history, genetics* and the feeling that they were *predestined to illness*. Middle age patients felt that *life, stress, work, family problems* and *personal overload* were the primary causes. Elderly patients on the other hand, felt that *age* was the main cause for their MI.

Fielding (1987), examined perceived causal attributions, perceived causal potency and perceived controllability of causal attributions, in a sample of 148 men with a confirmed first MI. All patients completed questions requesting a list of "factors you felt caused your MI". They then listed factors in order of perceived pathogenicity and rated them on a scale from 10 (most important contributing factor) to 1 (least important contributing factor). Finally each perceived causative factor was rated on a 4 point scale where 4 was "totally controllable" and 0 "totally uncontrollable". A total of 321 causes were cited by the patients, each cause listed was then classified according to type which resulted in 33 different causal categories. The most frequently cited causal factor was *overwork* followed by *smoking* and *worry*. *Hypertension* was rated as having the highest causal potency but over 76% of the total potency ratings were given to 5 categories including, *smoking* followed by *overwork, worry, lack of exercise* and *stress*. Standard risk factors for MI (smoking, hypertension, cholesterol, diet, overweight, lack of exercise, age, family history of heart disease and drinking alcohol) composed 39.56% of citations, accounting for 40.10% of the total potency ratings which was

less than that for overwork, worry and stress. Results also showed that *smoking, lack of exercise, lifestyle, overweight* and *diet* were all rated as significantly *more controllable* than were overwork, worry, stress, other illness, atheroma/cholesterol, frustration/anger and family history. *Family history, situational factors, age* and *hypertension* were all perceived as *totally uncontrollable.* These patients seemed to emphasise psycho-social causes which, as Fielding pointed out, is conflicting with current medical opinion, which emphasises biological causes. Overwork, worry and stress were all rated amongst the most important causes, but at the same time they were looked upon as less controllable than many other factors. This could have implications for the patients' recovery and need for intervention programs in order to help patients to gain control over these factors. Examining patients' causal attributions in the way the above studies have done, could therefore, as suggested by Fielding, provide health care professionals with insight into areas with which the patient may experience difficulties, thus indicate possible remedial action. Furthermore, an understanding of patients' causal attributions could help predict whether difficulties in compliance or rehabilitation are likely to occur and in relation to what specific factors.

Another study based on qualitative methodology was carried out by Kroode et al. (1989), who were interested in how and if causal attributions differed between different groups of patients. This interest was based on their previous work on 17 patients with cancer who had been interviewed in an unstructured manner, including one compulsory question, "Could you tell me, what is, according to you, the cause of your illness?" The findings of this study showed that the *majority of patients gave more than one story as an explanation for the cause of their illness.* One was a *biological cause* heard from their physician, the other was, what the authors called *idiosyncratic and informal explanations* where the patients expressed their need for causality, also a need to apportion blame and self-blame. Following on from this, questions for further research were evoked including a question on whether other groups of patients made the same kind of explanations.

In order to assess this question, Kroode et al. (1989), examined whether there was a difference between causal attributions made by patients with cancer and those made by patients with MI. They interviewed 33 patients

with cancer 2 months after their last radiation treatment and 14 patients with MI just after they had completed a rehabilitation program. The assessment was based on an unstructured interview where the patients were encouraged to tell and talk as much as possible about their illness. The interviewer did however, make sure that the following 8 topics were covered: medical history, causal attributions, biographical data, life style changes since diagnosis, social comparison, information gathering, anxiety and the future. Answers were then classified into different sub-topics by 2 independent judges. Doubts about causal attributions and conflicts with others about causal attributions were also analysed. The results showed that *all patients, both cancer and MI, had thoughts about the cause of their illness.* There was no difference between the groups in doubting their explanations, however, there was a difference in how doubt was expressed. The majority of *patients with cancer* like in the pilot study, came up with *two kinds of explanations for what had caused their illness, i.e., a medical explanation and an idiosyncratic explanation based on their autobiography.* Thus, cancer patients were found to show an internal conflict between those two explanations. *Patients with MI on the other hand, had only one explanation for the causes of their illness which was based on medical stereotypes.* MI patients seemed to built up their own informal medical story based on medical insight, mostly explanations from their physicians or from elsewhere, for example the library. Cancer patients were more likely to be in conflict with others causal attributions (physician and family) than patients with MI.

In an attempt to explain these findings the authors suggested that the differences in causal attributions made by these two patient groups could be to do with the lack of knowledge about the cause and course of most cancers, whereas there is much more widespread knowledge about the causes of an MI. They also pointed out that MI patients get the possible causal explanations handed to them by there physicians, so all they need to do is to *check* what fits their autobiographies. Patients with cancer do not get any ready made explanations handed to them and therefore they have to *search* for possible explanations. The findings of this study do seem to imply good news for patients with MI at least they do not appear to suffer any conflict, either internal between different causal explanations or external with other people. The study did however, not report exact time of data collection which might have given a different picture. For example

MI patients could have shown a similar conflict if they had been interviewed early on following the onset of their illness and not after having completed a rehabilitation program, which could have had a major effect on their causal attributions.

A study by Mumma and Corkle (1982-1983), also assessed the difference in causal attributions made by patients with MI on the one hand and lung cancer patients on the other. This was a longitudinal study, including 67 patients with lung cancer and 71 patients with MI, assessing attributions made on two occasions, 1 month and 2 months following diagnosis. The measurement tool used in the study was an Acknowledged Awareness Scale. Acknowledged awareness was defined as "***the subject's verbalised statement about his diagnosis, prognosis and treatment goals***" (Mumma & Corkle, 1982-1983, page 314). The scale included 18 questions grouped into the following categories: how the subject referred to their condition, described their future, described the purpose of their treatments, whether the subject referred to their own death and whether they felt their condition was due to personal factors. Attributions were assessed by one item of the awareness structured questions, asking what they believed had brought about their illness, and why did it happen to you? Responses were then coded by the interviewers based on whether the patient perceived his/her condition as the result, to some extent of personal factors, i.e., life style, habits, behaviour, personality etc. The findings of the study showed that at time one (approximately 1 month after diagnosis) 31 of 65 patients with cancer saw themselves as somewhat responsible for bringing about their illness. With regard to patients with MI, these numbers were 42 against 60. At time 2 (1 month later) results showed that 29 of 50 patients with cancer and 41 of 51 patients with MI saw themselves as responsible to some extent. The causes identified by both patient groups were categorised as follows: *don't know, heredity, smoking, overweight/diet, lack of exercise, hypertension, stress/worry/tension, exposure to noxious fumes/chemicals/asbestos, overexertion/working too hard, just happened/fate* and *other.* The most frequent responses by both patient groups analysed together were. *don't know, smoking and stress/worry/tension.* When assessing the differences in causal attributions made by patients with cancer vs. patients with MI, the findings showed that the most frequent attributions made by patients with MI were related to life style, such as stress, smoking and overweight/diet, attributions

which could be, like the authors pointed out, be interpreted as self-blame or self-responsibility for what happened to them. Patients with lung cancer, on the other hand, tended to attribute their illness to smoking, (a life style cause) or to noxious fumes or asbestos at work. Furthermore, more patients with lung cancer said that they did not know what had caused their illness. However, *don't know* response was among the top three most popular responses by both patient groups at both assessment times. The authors attempted to explain this last finding and argued that patients might be reluctant to speculate on what caused their illness, that they might lack information regarding association between risk factors and disease or that they have difficulty accepting self-responsibility for their illness even if they had identified a cause. These results are also interesting in light of the findings by Kroode et al. (1989), presented above. Kroode and colleagues found patients with MI to have more knowledge about the causes for their illness than patients with cancer, they did however interview patients following rehabilitation, which as was pointed out earlier, could have influenced the results. In fact, Mumma and Corkle's findings could indicate, that was indeed the case, as both their samples showed high uncertainty as regards causal attributions for their illness.

A study by Rudy (1980), went further than the aforementioned studies and examined both patients and their spouses causal explanations for a first MI. This study had four main research questions: Firstly, what were the patients' explanations about the cause for their MI both during the acute illness episode and during the convalescent phase. Secondly, do patients' and spouses' causal explanations differ? Thirdly, do causal explanations of patients and their spouses change from the acute to the convalescent phases of the illness? Fourth and finally, how do patients causal explanations differ from professional knowledge? 50 patients and their spouses were interviewed on two occasions, first within 48 hours after discharge from the coronary care unit (acute phase) and again approximately one month following discharge from hospital (convalescent phase). Causal attributions were assessed by open-ended questions, including probe questions related to the patient's perceptions of what happened and what they believed had caused their MI. The structured Causal Questionnaire, utilised by Croog and Richards (1977), and designed to determine the relative importance of beliefs in factors

contributing to the MI was also administrated. This questionnaire includes a list of causal items and also asks the subjects to rate the importance of each causal factor. Finally, demographic data and information on medically identified risk factors for coronary artery disease was gathered for each patient. The results from the study showed that *at both illness phases, patients and spouses expressed multiple causal explanations.* The most frequent causal explanation of patients and their spouses at both times of measure was *tension in life*, related to *work* or the *home* situation. The five causal factors which were rated as the most important by all participants at the acute phase were: *worry, nerves, feeling tense, smoking, heredity* and *tension at work.* The least important causes at the acute phase were: *Payment for sins, punishment for doing wrong, drinking, diabetes* and *bad luck.* During the convalescent phase the most important causes were: *worry, feeling tense, nerves, tension at work* and *eating fatty foods.* Factors which were not rated as important at the convalescent phase were the same as reported at the acute phase, although in a slightly changed order: *punishment for doing wrong in life, payment for sins, diabetes, drinking* and *bad luck.* When examining the differences between patients' and spouses' responses the results revealed that the *majority of patient/spouses pairs disagreed on the causal explanation* they gave for the MI. Overwork as a cause was expressed more frequently by spouses. The patients/spouses pairs which did not agree on the cause mostly showed that patients tended to respond by "don't know" when asked about the cause at the acute phase while their spouse mentioned a causal explanation. In other disagreeing pairs, spouses more often gave overwork and personality as a cause than the patient. *A slight majority of patients changed their causal explanation between the two assessment times.* When a patient added a new cause to the original causes given at the acute phase it was considered a change. The authors however, did not report which particular changes did appear.

Finally, in order to assess whether causal attributions made by patients/spouses and health care professionals differed, risk factors were identified for each patient, including smoking, overweight, family history, diabetes, hypertension, high blood lipids and exercise outside work. Results from this analysis showed that the majority of *both patients and their spouses did not name as a cause the risk factor named by the professionals; this was true both at the acute and the convalescent phase.*

They were however, more likely to report the identified risk factor as important in contributing to the onset of the MI when asked to respond to questions about its importance. Other results showed that a *high percentage of patients reported that they had changed their smoking, diet and exercise behaviour, even though they had not listed these factors as causes of the MI.* In her conclusion the author picked upon the fact that these patients as well as their spouses most often mentioned tension as a cause for their illness. In an attempt to explain this result she pointed out that tension is a safe explanation because it is difficult to dispute its presence since it is not readily measurable, and perhaps identifying tension as a cause worked to decrease feelings of self-blame and made it possible to externalise the cause.

A study by Croog and Richards (1977), carried out 3 years prior to Rudy's study, showed similar results in respect to changes in smoking behaviour although smoking had not been identified as a cause. This was a longitudinal study, spanning 7-8 years of data collection, including 205 men who had suffered a first MI and their wives. The results from this study showed that those who believed that smoking could have caused their MI were not any more likely to have stopped smoking than those who did not believe in smoking as a cause, this was true at all assessment times. Thus, Croog and Richards (1977) as well as Rudy (1980) failed to find a connection between causal attributions and behaviour change.

However, with regard to tension, Koslowsky et al (1978), found similar results to Rudy's study, when examining perceived causes of myocardial infarction in a patient population of 345 men one month after discharge from hospital. Causal attributions were assessed by a list of 16 items, including common explanations for heart disease, such as worry, smoking, kind of food eaten, will of God etc. Patients were asked to rate each cause on a 3 point scale, as either "very important", "important" or "not important". In addition to this list several open questions examining perceived responsibility of the patient themselves, other people or events, were also included. The extent of perceived control in the possible prevention of the MI was also examined and responses coded either as "something" or "nothing". The results showed that the most important perceived cause was "*being under tension at work*" followed by "*nerves*", "*worry*", and "*smoking*". The least important perceived causes were

"punishment for doing wrong in life", "problems with wife" and *"drinking"*. The 16 individual items were then factor analysed which gave 4 categories of *tension, supernatural, family* and *physical*. *Heredity* and *bad luck* were analysed separately as they did not fit in any of the other factors. All these factors were then further classified into two categories *personal* and *environmental.* Patients reported *physical* and *tension* causes as more important than supernatural, family and heredity causes. Correlations between the factors showed that the supernatural factor was relatively independent of the others, tension and physical were moderately intercorrelated and the family factor was related to tension but not to the physical factor. Finally, a multiple regression analysis found that individuals with high emotional stability, who were younger and had more skilled occupations tended to list tension items as the most important cause of their MI. In their conclusion the authors pointed out that these patients were most likely to attribute their illness to items which could be classified as personal. The authors also speculated that education, influences from the media and understanding of the disease process were possible reasons for why the patients were most likely to attribute to "work tension" and "physical causes". Furthermore, they pointed out that these data identified a number of target populations for rehabilitation. For example, several of these patients considered themselves to be under high tension at work and believed that tension was important in the development of their illness. These attributions and beliefs could thus guide health professionals in their rehabilitation therapy so they could aim towards and concentrate on alleviating stress and help in reducing the risk of recurrence.

Another study by Affleck et al. (1987), examined relations between causal attributions, perceived benefits and health outcome in a sample of 287 men who were followed up for 8 years after their first MI. The study predicted firstly, that patients who attributed their MI to personal behaviours or who perceived benefits in their situation would be less likely to suffer another MI and should exhibit less long-term morbidity. Secondly, those who blamed other people for their illness would experience more adverse health outcomes. The study also addressed the question of how survival of a second MI would affect individuals' cause and benefit appraisals. Causal attributions were measured both at 7 weeks and at 8 year follow up. Patients were presented with a list of 13 causes of MI which were rated on a 3 point scale (1= not important/don't know, 2= somewhat important, 3=

very important). Five attribution scores were then calculated by summing responses within each category (categories had been defined by a factor analysis) and divided by the number of items in the category. Those five categories were labelled, *personal behaviour, stress responses, other people, bad luck* and *heredity*. Patients were also asked an open question on whether they saw any gains or benefits from the MI and if so, what they were. Information on the severity of the MI was gathered from the patients' physician including information on how much affect the physician thought the MI would have on the patients' life. In addition, the 8 year follow up interview included several items where patients were asked to describe their health status and symptoms of cardiac illness. Descriptive findings of the study showed greater attributions to *stress* and *personal behaviours* and less attributions to *luck* and to *other people* at both times of data collection. A slight majority of patients reported benefits from their MI at both times of measure.

Overall findings showed that patients who perceived benefits from a first MI were less likely to have a subsequent MI and showed less morbidity 8 years later. *Attributions made 7 weeks after the MI were also found to be predictive of health outcomes. Blaming the MI on other people* was related to *higher incidence of re-infarction* and attributing to *stress* was predictive of *greater morbidity*. Furthermore, at the 8 year interview results showed that men who had survived another MI were more likely to report benefits and made *more attributions* than those who had not suffered another MI. In an attempt to explain the adverse health outcomes predicted by attributing the MI to stress, Affleck et al., pointed out that this could be related to that patients who were more likely to attribute to stress, also perceived the stress as less controllable. This in turn, could then lead to a sense of helplessness when it came to making adaptive life-style changes. Affleck et al., also pointed out that these patients might simply have been exposed to more stress which then accounted for their deteriorating health. Although an interesting and an important contribution to research in this field, this study, as the authors were aware off, did not measure many important psychological variables which could have been related to attributions and affect recovery, such as distress and behaviour change. However, like the previous study, the data from this research did point towards a target population for rehabilitation programs, i.e. those who attributed their MI to stress factors. As pointed out by Koslowsky et

al., these attributions might therefore be important components for rehabilitation which could provide aid in order to reduce and alleviate stress.

The importance of examining patients' causal attributions following MI was clearly supported in a study carried out by Burgess and Hartman (1986). They set up an intervention study using cognitive and behavioural approaches aimed at reducing psychological distress, altering restrictive beliefs, provide guidance to family to help reduce stress on the social network and facilitate return to work. One hundred and eighty MI patients were interviewed on 3 different occasions, first during the final week of hospitalisation, at the end of intervention 3 months after discharge and a final follow up approximately 13 months after admission to hospital. Patients were divided into 2 groups, one receiving intervention the other not (controls). A variety of measurement tools was used, including a measure of anxiety and depression, social support network scale, open ended questions concerning resistance to return to work, job stress and security, type A personality and health beliefs. The findings of the study showed that the majority of patients attributed their illness to *work*, followed by *smoking, diet, heredity* and *fate*. A large majority (63%) saw the illness as preventable and controllable and *most patients (71%) altered their beliefs about what caused their MI over time.* A number of benefits were reported from altering restrictive patterns of beliefs and presuppositions about causes, these included significantly less psychological distress, less dependence on family support and fewer deterrents to work resumption in the intervention group than in the controls. These findings thus support the importance of both examining and intervening with attributions which might lead to unjustified restrictions on activities by helping patients, as was done in this study, to repattern thoughts by reframing, offering corrective information and clarifying experiences associated with the limiting thoughts.

The final study to be reviewed here was carried out by Naea de Valle and Norman (1992). This study sought to examine the relationships between causal attributions, health locus of control beliefs and reported lifestyle changes in a sample of 81 male pre-operative coronary artery by-pass graft patients. Based on previous research this study made the following predictions: First, that behavioural self-blame would be related to beliefs

that one's health and illness is under one's control (i.e., internal locus of control beliefs - HLOC). Second, that patients who attribute their illness to behavioural self-blame would report greater lifestyle changes. Third, patients with strong internal HLOC beliefs would report having made more lifestyle changes. The patients who participated in the study were all out-patients registered for coronary artery by-pass graft surgery. A questionnaire including 3 different sections was sent to each patient . The first section examined patients' beliefs about the causes of their illness. This was assessed by a list of 21 possible causes of coronary heart disease, including items such as, smoking, stress, worry, eating fatty foods etc. Each patient was asked to report which ones they thought might have caused their illness. Answers were rated on a 3 point scale with 1 = no, 2 = might have and 3 = yes. Patients could also add any other causes they thought was relevant but had not been on the list. Finally, patients were asked what they thought was the main cause of their illness. The 21 causal items on the list were rated by 4 independent raters in order to identify which items could be classified as behavioural self-blame. This produced a behavioural self-blame scale consisting of 8 causes: smoking, drinking excessive amounts of alcohol, lack of exercise, being overweight, poor diet, eating fatty foods, overwork and over exertion or sudden exercise. The second section of the questionnaire consisted of one open question assessing lifestyle changes as a result of the illness, i.e., "Have you changed your lifestyle since the diagnosis? If so, how?" The third and final section of the questionnaire used Form B of Wallston and Wallston's (1978 & 1981) multidimensional health locus of control scale. This instrument examines to what extent individuals believe that their health and illness is influenced by "internal factors", "powerful others" and "chance".

The results showed that patients were most likely to attribute their illness to *stress, work, eating fatty foods, high levels of cholesterol, smoking* and *heredity factors.* When asked about the main cause of their illness the majority of patients reported stress or worry, next came smoking, heredity factors and 14 % said that eating fatty foods was the main cause. When assessing health locus of control beliefs results showed that patients expressed strong beliefs that their health was influenced both by internal factors and by powerful others. Patients were however, less likely to belive that their health was influenced by chance. Further analysis found a

positive relationship between internal health locus of control beliefs and behavioural self-blame. *Patients who believed that their health was under their own control were also more likely to attribute their illness to behavioural self-blame.*

The majority of patients (83%) reported lifestyle changes, most frequently related to dietary changes, stress management techniques and cutting down or quitting smoking. When examining the relationship between behavioural self-blame and lifestyle changes results showed that *behavioural self-blame was closely associated with number of lifestyle changes which could aid recovery.* These findings therefore contradicted those reported by Croog and Richards (1977) and Rudy (1980) reviewed earlier, where causal attributions and lifestyle changes were not found to be related. However, while behavioural self-blame attributions were clearly related to lifestyle changes, Naea de Valle and Norman found that patients' general health locus of control beliefs were unrelated to reported changes. Health locus of control beliefs influences were only seen in relation to patients' attributions. In their conclusion Naea de Valle and Norman, pointed out the importance of these results, which seemed to confirm that making causal attributions may provide impetus for future action, especially when attributions include behavioural factors which are themselves modifiable. Thus, bearing in mind the link between a number of lifestyle behaviours and coronary heart disease, adoption of such causal attributions by MI patients could prove to be crucial for long term recovery.

3.4. Summary of causal attribution review.

All of the above studies have made a considerable contribution in confirming the important role of causal attributions in the process of adjustment to severe and life-threatening life events. Furthermore, a strong point of research in this area, includes the attempt it has made in comparing results across different studies. However, the cross-sectional and retrospective nature of most of these studies means that one needs to be careful in making too many and too strong conclusions. Furthermore, several of these studies, in particular studies on MI, have been descriptive and explorative (Cowie, 1976; Meyer, 1983; Fielding, 1987; Kroode et al., 1989; Koslowsky et al., 1978). Lack of outcome assessment such as, levels of distress and behaviour change is also evident, which makes it difficult to assess the relationship between these factors and causal attributions. Assessment of causal attributions has also mainly relied on open ended questions about patients' causal ideas, multifactorial assessment of causal attributions, such as including both open ended questions and checklists, has rarely been applied. Assessment of adjustment has relied heavily on subjective measures, such as caregivers ratings, which makes it difficult to compare results from one study to another. On the other hand, all these points provide good grounds for further research. In particular, given that existing results seem to imply that causal attributions change over time (Rudy, 1980) although in what particular way is still unclear, the need for longitudinal studies in this field is apparent. Existing results have also shown that causal attributions are related to for example, subsequent health outcome (Affleck et al., 1987). Thus, providing longitudinal studies would not only enable researchers to examine the process of causal attributions over time but also in relation to adjustment and other outcome variables. Relying on standardised measures would also provide better grounds for compatible comparisons between studies.

The main findings of the studies reviewed here are summarised below and in table 3.4.1.

Findings have shown that:

Making attributions is important, in particular following illness. Engaging in causal attributional search appears to make the illness more comprehensible and intelligible and be related to better adjustment (DuCette & Keane, 1984).

There appears to be support for the distinction between two types of self-blame, behavioural self-blame (behaviour self blame for short) and characterological self-blame (character self blame). Majority of published studies have found support for those two types of self-blame, showing behavioural self blame related to better general adjustment while character self blame is most commonly related to poorer adjustment (Janoff-Bulman, 1979; Affleck, et al., 1985; Major et al., 1985; Mueller & Major, 1989; Meyer & Taylor, 1986; Kiecolt-Glaser & Williams, 1987).

Behavioural self blame is related to lifestyle changes following illness (Naea de Valle & Norman, 1992).

Other-blame has consistently been related to poorer adjustment (Tennen & Affleck, 1990).

Patients with MI most commonly attribute their illness to stress, worry, work, smoking, diet and heredity factors (Koslowsky et al., 1978; Burgess & Hartman, 1986; Naea de Valle & Norman, 1992).

Causal attributions made early on following illness have been shown to predict subsequent health outcome (Affleck et al., 1987).

Finally, recovery programs have reported benefits following a change in attributions (Burgess & Hartman, 1986).

Table 3.4.1. Summary of causal attribution research findings in relation to self-blame, other-blame and general adjustment.

Study(type)	Subjects	Self-blame	Other-blame	General adjustment
DuCette & Keane (1984) (cross-sectional)	90 patients thoracic surgery	Not reported	Not reported	Better adjustment if attribution was made
Janoff-Bulman (1979) (cross-sectional)	129 students women	Character self blame related to depression	Not reported	Not reported
Janoff-Bulman (1979) (cross-sectional)	Rape victims	Support for the 2 types self-blame; self behaviour vs. character self blame	Not reported	Not reported
Timko & Janoff-Bulman (1985) (cross-sectional)	42 women with breast cancer	Character self blame related to believing that treatment was unsuccessful	Other blame related to believing that treatment was unsuccessful	Both types of self-blame were mediated by perceived avoidability of cancer and its related cognitions
Affleck et. al. (1985) (longitudinal)	57 mothers of disabled infants	Behaviour self blame related to better adjustment	Not reported	See self-blame
Major et.al. (1985) (longitudinal)	Women having an abortion (N=247)	Character self blame related to poorer coping and more depression	Not reported	High situation blamers were more depressed than low situation blamers
Mueller & Major (1989) (longitudinal)	Women having an abortion (N=283)	Character self blame related to poorer adjustment	High other blame related to poorer adjustment	
Meyer & Taylor (1986) (cross-sectional)	Rape victims	Behaviour self blame related to higher depression.	Not reported	Not reported
Tennen & Affleck (1990) (review paper)	Reviewed 25 studies on other-blame	Not reported	22 studies showed other-blame and 17 of those found it to be related to worse general adjustment	
Linn et al. (1982) (cross-sectional)	120 patients with cancer & 120 patients with other illnesses	Self-blame or other-blame were not reported individually or how they related to adjustment. Cancer patients were however, more likely to attribute to will of God or genetic factors than non cancer patients.		
Janoff-Bulman & Wortman (1977) (cross-sectional)	29 people with spinal cord injury	Self blame related to better coping outcome	Other-blame related to poorer coping outcome	

Table 3.4.1. cont. Summary of causal attribution research findings in relation to self-blame, other-blame, general adjustment and type of attributions.

Study (type)	Subjects	Self-blame	Other-blame	General adjustment
Taylor et al. (1984) (cross-sectional)	179 patients with cancer	Self blame no relation to adjustment	Other-blame related to poorer adjustment	
Schulz & Decker (1985) (cross-sectional)	100 people with spinal cord injury	Self-blame related to higher levels of well being and better coping	Not reported	
Kiecolt-Glaser & Williams (1987) (cross-sectional)	49 patients with burn wounds	Behaviour self blame related to poorer compliance with nurses more pain behaviour and higher depression	Not reported	See self-blame
Frey et al. (1985) (cross-sectional)	64 accident victims	Self-blame was related to worse recovery	Other blame not reported but attributing to chance and/or fate related to better recovery	See other blame
Nielson & MacDonald (1988) (cross-sectional)	58 individuals with spinal cord injury	High self-blamers were more anxious and depressed and had greater feelings of hostility.	Not reported	See self-blame
Witenberg et al. (1983) (cross-sectional)	43 patients undergoing hemodialysis treatment	Self-blame showed a trend towards being related to poor coping outcome	Not reported but patients who had been unable to identify a cause but had thought about it, coped and complied poorly. Also, attributing to heredity was related to better coping outcome and better compliance.	

Summary of MI causal attribution research findings.

Cowie (1976) (cross-sectional)	27 patients with a first MI	Specific attributions not reported but general conclusion that the MI was made more *intelligible* and *comprehensible* if attributions were made.			
Meyer (1983) (cross-sectional)	30 male patients with MI	*Younger patients* attributed to = family history, genetics and being predestined to illness. *Middle aged patients* attributed to= life, stress, work, family problems and personal overload. *Elderly patients* attributed to = age.			
Fielding (1987) (cross-sectional)	148 male patients with a first MI	Not reported using those terms	Not reported using those terms	Not reported	Most common to attribute to overwork, smoking and worry

Table 3.4.1. cont. Summary of MI causal attribution research findings in relation to self-blame, other-blame, general adjustment and type of attributions.

Study (type)	Subjects	Self-blame	Other-blame		General adjustment
Kroode et al. (1989) (cross-sectional)	33 patients with cancer and 14 patients with MI	MI patients have a *medical explanation*, cancer patients not MI patients *check* whether medical attribution fits them but cancer patients have to *search* for an explanation.			
Mumma & Corkle (1982-83) (cross-sectional)	67 patients with lung cancer & 71 patients with MI	Patients with MI were more likely to attribute to lifestyle factors than cancer patients. Most frequent attribution responses by both groups: *don't know, smoking* and *stress/worry/tension.*			
Rudy (1980) (longitudinal)	50 patients with MI and their spouses	Not reported using those terms	Not reported using those terms	Attributions and lifestyle changes not related	Most common to attribute to tension at work and at home
Croog & Richards (1977) (longitudinal)	205 men with MI and their wives	Self-blame or other blame not reported but those who attributed their MI to smoking were not more likely to stop smoking than those who did not see smoking as a cause.			
Koslowsky et al. (1978) (cross-sectional)	345 male patients with MI	Not reported using those terms	Not reported using those terms	Not reported	Most important causes: tension at work, nerves, worry, smoking
Affleck et al. (1987) (longitudinal)	287 male patients with MI, an 8 year follow-up study	Self behaviour blame not related to adjustment or other outcome	Other-blame related to higher incidence of reinfarction	Attributions made 7 weeks after MI predict health outcome 8 years later	Most common to attribute to stress and personal behaviours ,i.e. smoking, eating etc.
Burgess & Hartman (1986) (longitudinal)	180 patients with MI	Not reported using those terms	Not reported using those terms	Benefits from changing patients attributions	Most common to attribute to work, smoking, diet, heredity and fate.
Naea de Valle & Norman (1992) (cross-sectional)	81 male pre-operative coronary patients	Self behaviour blame was related to number of lifestyle changes	Not reported	Not reported	Most common to attribute to stress, work, diet, high cholesterol, smoking and heredity

Chapter 4 presents the empirical study research aims, hypothesis and methods and is organised in the following way:

Sub-headings:

Design
Procedure
Study participants

CHAPTER 4.

The Empirical Study: Research Aims, Hypothesis and Methods.

4.1. Aim.

The purpose of this thesis was to examine the role of coping strategies and causal attributions, in particular in relation to distress, following a chronic illness. Coping strategies and causal attributions, as the previous literature review has shown, have been found to relate to and predict recovery and adjustment to illness. However, as argued in previous chapters research in this area has a number of limitations, especially in relation to methodological issues, which need to be examined further. Another point regards the need for longitudinal studies. Most of the studies in this literature are cross-sectional but both coping strategies and causal attributions are thought to be concepts responsive to change. Cross-sectional studies are however, unable to assess change. In addition, longitudinal studies are better suited for assessment of chronic diseases which may require considerable long term adjustment. Considering these issues and based on existing findings, the empirical part of this thesis sought to examine coping strategies, causal attributions and distress over a period of one year following a first myocardial infarction. The study was designed to achieve the following 2 main aims:

1) To assess how the process of coping strategies, causal attributions and distress changed over a period of 1 year following a first MI.

and

2) To examine how coping strategies, causal attributions and distress related to and predicted one another from one point in time to another.

In order to achieve these aims a longitudinal study design was used which enabled the prediction of change, including the following hypothesis:

1) Coping strategies will change over time.

2) Coping strategies will be concurrently related to and predict levels of distress. In particular, *avoidant coping strategies will be related to lower distress at discharge but higher distress at later follow up.*

3) Causal attributions will be related to and predict coping strategies.

4) Patients will be most likely to attribute their illness to stress and smoking.

5) Behavioural self blame will be concurrently related to and predict lower levels of distress.

6) Characterological self blame will be concurrently related to and predict higher levels of distress.

7) Other-blame will be concurrently related to and predict higher levels of distress.

4.2. Methods.

Design.

The design of the present study was longitudinal. Patients with a chronic illness, a confirmed first myocardial infarction (WHO criteria) were recruited into the study within 72 hours of admission to hospital. Criterion for entering the study was that all patients were no older than 70 years, able to speak English and to participate in the study procedure and willing and able to give informed consent to participate in the study within those 72 hours of admission. All patients were then followed up over a period of 1 year and interviewed on 4 different occasions, within 2 weeks of discharge from hospital, at 2, 6 and 12 months post admission. Each follow-up time point was carefully selected with a particular objective in mind.

Firstly, within 2 weeks of discharge the patients have very recently gone home from hospital and are in an environment where they need to deal with the situation themselves, they no longer have the security of the hospital surroundings.

Secondly, at 2 months post admission the patients have been at home for some time, but life is not back to normal yet. They are still going through a healing period and are not back to work. This time was therefore

considered important for observation to see how and if things had changed since earlier and how the adjustment was being handled.

Thirdly, at 6 months post admission most patients would have passed the healing period and life would be just getting back to normal, they would recently be back to their previous activities. At this point one could assess how things had developed and how or if patients were settling into ordinary life routines.

Finally, considering that having an MI is a serious chronic condition, examining how patients are and have coped, their causal attributions and their levels of distress 1 year following the onset of the illness is of considerable importance. This assessment could provide information on valuable issues, such as what are the long term effects of the illness and how are they being dealt with which in turn could provide information on who is likely to have further complications.

All assessment was designed to be carried out in an interview form using pre-structured questionnaires, measuring coping strategies, causal attributions and distress as well as gathering demographic information.

Procedure.

The procedure started by seeking Ethical Approval from the Tayside Committee On Medical Ethics, which approved the study proposal in time for data collection to begin. Patients were recruited within 72 hours of admission to hospital. They were all individually approached by one of two researchers who explained the nature of the study and asked them if they wanted to participate. As the data collection for this study was combined with data collection for another empirical study carried out using the same patient population, two researchers were involved. This also meant that the introduction to the study was somewhat different from what was needed for the study described here. The introduction was based on explaining the other empirical study, which was a randomised controlled trial examining different rehabilitation methods. This involved explaining to the patients that if they agreed to participate in the study they would be randomly allocated to one of three groups providing different advice and care. This was carried out as described below.

When the patients were approached the researchers introduced themselves and asked if they could tell the patient about a study being carried out at the hospital. If the patient was interested, the study was explained (see Appendix I) as a study interested in what was the best way to give information and advice to people who have just had a heart attack. The patients were then told about three ways of providing advice and support. One way was introduced as the "standard advice and care you receive while you are in the hospital" and that everyone entering the study would still get the standard care. The second possibility was introduced as "additional advice and support while you are in the hospital", so the second group would get the standard care plus additional counselling while they were in hospital provided by a cardiac recovery sister. The third possibility was introduced by saying that people might benefit from support after they had gone home. The third group would therefore receive standard care plus support from the recovery sister both in hospital and after they went home. She would see them weekly for up to six weeks after they went home. Patients were also informed that the study was interested in seeing how the heart attack affected their partners and they would also receive advice and support.

Following this introduction patients were told that if they entered the study they would be asked to answer some questions while they were in hospital (which was then carried out at the recruitment point) and they would also be seen at home 4 times, just after discharge from hospital, after 2 months, 6 months and 1 year, they would be followed up to see how they were getting on. They were also assured of confidentiality and anonymity. Patients were then asked if they wanted to participate and given a written summary about the study. If they agreed to take part they were asked to sign a consent form (see Appendix II) and following on from there demographic details were written down and the first questionnaire introduced. At this point only level of distress was assessed and one open ended question which asked what patients thought had caused their MI, no coping data was gathered at this time. (Recruitment data is not presented in this thesis). The researcher read out the questions, word for word as they appeared on the questionnaires and wrote down the patients responses, this was the procedure at all times of data collection. Partners, defined as the person the patient identified as being the most involved in their recovery, were also invited to participate (partners data was however

not included as a part of this thesis and will therefore not be described further). The recruitment session concluded by telling the patients that they would be contacted again at home within 2 weeks of discharge from the hospital. Before those 2 weeks were up the recruitment researcher phoned the patient to make an appointment in order to complete the first follow-up interview. At this time the patient was informed about the other researcher involved in the study and that she would be coming to interview their partner.

Follow up interviews with all patients, apart from one, were carried out at the patient's home. The one interview which was not carried out at the patients home was conducted in the hospital at the patient's own wish. All interview sessions concluded by thanking the patient and reminding them of the next interview time. Approximately 2 weeks before the 2, 6 and 1 year follow-up interviews all patients were sent a letter (see Appendix III) thanking them for participating in the study and reminding them that they would soon receive a phone call in order to arrange a time to make an appointment to carry out the next interview. About a week before their interview was due patients were phoned and an appointment arranged. All follow-up interviews lasted on average 1 hour and 40 minutes.

Study participants.

The participants in the study consisted of patients admitted to a coronary care unit (CCU) in a Scottish teaching hospital between January 1992 and February 1993. During this period of recruitment into the study, 1274 patients were admitted to the coronary care unit, 446 were diagnosed as having MI of those 271 were eligible for inclusion in the study. 135 were approached to participate, the remaining group either died before recruitment, were too ill to participate or were unable to be recruited within the 72 hours criteria. 13 patients refused to participate in the study and 5 were excluded when diagnosis was subsequently changed, i.e., MI was not confirmed by cardiac enzymes and/or angiography.

This left 117 patients being successfully recruited and ready for follow-up interviews, 17 of those were lost during the follow-up period. 1 patient withdrew before 6 months follow-up because of wife's illness, 1 withdrew before discharge interview as a result of wife's upset over the questions

and 5 patients withdrew before 6 months interview without giving a particular reason, 1 moved out of the region, 7 died, (3 before 2 month follow-up, 3 before the 6 months interview and one before the 1 year interview) and finally 1 was too ill to complete the 1 year follow-up and 1 patient was out of the country and therefore not available to complete the last interview.

The final sample therefore consisted of 100 patients who were still participating in the study 1 year after admission to hospital. This sample included 65 males and 35 females with a mean age of 56.03 years, the youngest patient being 38 years old and the oldest 70, all participants were white. Additional sample characteristics are summarised in table 4.2.1. below. As this table shows, the majority of patients were married, had completed secondary school and belonged to social class 3 (as defined by the OPCS) either non-manual or manual, with more patients being classified as class 3 manual workers.

Table 4.2.1. Sample characteristics, including marital status, education level and social class.

Marital Status	*Percentage*
Married	78.8%
Widowed	9.1%
Separated/Divorced	7.1%
Single	5.1%
Education Level	
Primary School	8.5%
Secondary School	73.4%
Professional Training	14.9%
University	3.2%
Social Class	
Class 1	7.3%
Class 2	14.6%
Class 3 Non-manual	19.5%
Class 3 Manual	34.1%
Class 4	9.8%
Class 5	14.6%

Chapter 5 presents information about the measures used in the empirical study and data coding, data analysis and data screening information. It is organised in the following way:

CHAPTER 5

Measures, Data Coding, Data Analysis and Data Screening.

Measures.

The present study used three main measures, one to examine coping strategies, another for assessment of causal attributions and the third for measuring levels of distress. All of these measures had been developed and used in pre-existing literature. An overview of the measurement instruments is presented below and a copy of each questionnaire is included in Appendix IV.

5.1. Coping Measure.

The COPE, general description.

Coping strategies were assessed using the COPE, a multidimensional coping inventory developed by Carver, Scheier and Weintraub (1989) to assess the different ways in which people responded to stress. The COPE was chosen for this research for the following reasons:

1. It is a standardised measure based on theoretical models.

2. It is based on previous research findings.

3. It is a very comprehensive measure of coping.

4. It can be used to measure both situational and dispositional coping.

Carver et al., set out to develop the COPE as a result of reviewing studies which had used the Ways of Coping Scale (WCQ) to assess people's coping. As was pointed out in chapter 2 of this thesis, the WCQ examines two main ways of coping, emotion focused coping and problem focused coping. Carver et al. pointed out that although the distinction between emotion focused - and problem focused coping was an important one, it

was however too simple. This they based on studies which had used the WCQ and found that the responses given were not just based on those two factors but several other ones as well. For example, while some emotion focused coping responses included denial, others involved positive reinterpretation of the event and still others were based on seeking social support. Carver et al., argued that these responses were all very different from one another and that they might therefore have different implications for an individual's success or failure in coping. The same argument went for problem focused coping, which could be found to include a number of different activities, such as planning, taking direct action, seeking assistant or support etc. These different aspects of coping could also lead to various different coping outcomes. Therefore, Carver et al., suggested that in order to study these actions or thoughts individually, one also needed to be able to measure them separately. Furthermore, Carver and colleagues, considered that there were at least 3 problems regarding existing measures of coping. Firstly, they felt that none of the pre-existing measures gathered all of the specific domains which they considered to be of theoretical interest. Secondly, items included in most scales were considered not to be focused and clear enough. They combined too many qualities in a single item, which leads to uncertainty about what the item measures. Finally, Carver et al., criticised existing measures for being constructed empirically rather than theoretically. Items on those lists had just been picked as examples of potential coping responses not because they presented theoretically interesting coping categories. Thus, according to Carver et al., it was time for a theoretically based instrument.

With these shortcomings in mind, Carver et al., developed a measurement tool based on two theoretical models: The Lazarus model of stress and Carver and Scheier's behavioural self-regulation model (for more information on the behavioural self regulation model see Carver & Scheier, 1981). They also made use of pre-existing research findings which had utilised various coping measures.

This resulted in the development of the COPE, a coping inventory which initially incorporated 13 different scales. Five scales measure various aspects of problem focused coping, *active coping, planning, suppression of competing activities, restraint coping* and *seeking of social support for instrumental reasons*. Five scales measure aspects of what has been

referred to as emotion focused coping, *seeking of social support for emotional reasons, positive reinterpretation, acceptance, denial* and *turning to religion.* Three scales measure coping responses which Carver et al., referred to as less useful ways of coping, i.e., *focus on and venting of emotions, behavioural disengagement* and *mental disengagement.* In addition, two other scales labelled *alcohol and/or drug use* and *humour* were added at a later stage, these scales were regarded as more exploratory.

All these scales, were designed to include 4 items and this was confirmed by factor analysis (excluding the alcohol and/or drug use and humour scales). Thus, each scale includes 4 items, with four response alternatives; "1 = I don't do this at all", "2 = I do this a little bit", "3 = I do this a medium amount" and "4 = I do this a lot". In order to obtain each scale total score, the responses to the 4 items that make up each scale are summed. Thus each scale can result in a total score of minimum 4 and maximum 16 points.

The COPE was developed to assess both situational coping, a response to a particular situation or a specific period of time, and dispositional coping, a typical response to stress. The way these different types of situations are assessed is simply by reframing the items either in terms of what one *usually* does when under stress or what one is *currently doing* (or *did*) as a response to a specific situation or at a particular time.

The 15 coping scales proposed by Carver et al., are described as follows:

Problem focused:

1. *Active coping* refers to the process of taking action to remove or change the stressor.

2. *Planning* is thinking about and/or planning how to deal with the stressor.

3. *Suppression of competing activities* is when one suppresses other activities or puts them aside in order to be able to concentrate more on dealing with the stressor.

4. *Restraint coping* is waiting and holding back coping responses until the situation allows them to be of more use.

5. *Seeking of social support for instrumental reasons* refers to getting assistance, information or advice about how to deal with the situation.

Emotion focused:

6. *Seeking of social support for emotional reasons* is to get sympathy, understanding or moral support from other people.

7. *Positive reinterpretation and growth* is when one tries to make the best of the situation by looking at it in a positive way or try to learn from it.

8. *Acceptance* is accepting that the situation has happened and is for real.

9. *Denial* is rejecting the fact and reality of the stressful situation.

10. Turning to *religion* is engaging in religious activities.

Other:

11. *Focus on and venting of emotions* refers to being aware of emotional distress and try to discharge it.

12. *Behavioural disengagement* is giving up or reducing any efforts in trying to control the stressor. It is reflected in terms which are also identified as helplessness.

13. *Mental disengagement* is when one tries to avoid thinking about the stressor or what one should do about it. This includes a variety of activities such as, daydreaming, sleeping or self-distracting oneself in order to prevent the stressor from interfering.

14. *Alcohol and /or drug use* refers to using alcohol or drugs in order to detach the stressor.

15. *Humour*, laugh or make jokes about the stressor.

Carver et al., based on their theoretical models and previous research, predicted that active coping, planning, suppression of competing activities, positive reinterpretation and restraint coping would be adaptive ways of coping in situations were active coping was required in order to manage the stressor. They also predicted that seeking of social support both for instrumental and emotional reasons would be adaptive as well as coping by religion. Focus on and venting of emotions, denial and mental disengagement would on the other hand be maladaptive coping in situations were active coping was important. These ways of coping would though not be maladaptive in themselves, it would depend on the situation.

Validation of the COPE.

Carver et al., carried out 3 studies where they examined their proposed dimensions of coping included in the COPE. The first of these assessed dispositional coping by asking 978 undergraduate students how they usually coped when faced with stressful situations in their lives. The responses were factor analysed which gave 11 factors. Both the social support scales loaded on the same factor and so did active coping and planning, the authors did however decide to keep them as separate scales. One item which was originally meant to be an aspect of the mental disengagement scale, i.e. alcohol and drug use, did not load on any of the scales but was nevertheless kept for exploratory reasons. The fifteenth scale called humour, was not mentioned in this analysis or the reasons for including it.

The second study was carried out to test the construct validity of the COPE. This was done by examining the association between coping and various personality dimensions which reflected a preference for either active, task-aimed coping or showed a tendency against such efforts. Again Carver et al., asked undergraduate students to complete the COPE as well as personality measures. The results supported the predictions, which included that *active coping, planning* and *positive reinterpretation and growth* would be associated with optimism (measured by the Life Orientation Test (LOT)). Optimists have favourable expectations for their future, therefore according to Carver et al., optimism should be associated

with active coping efforts and with making the best of whatever happens. *Active coping, planning* and *positive reinterpretation* were also found to be positively related to self-esteem and type A behaviour (positive reinterpretation and growth was unrelated to type A), but inversely related to trait anxiety. *Denial* and *behavioural disengagement* on the other hand, were found to be negatively related to optimism but positively associated with trait anxiety.

In this manner Carver et al., examined both the convergent and discriminant validity of the COPE and found support for both. Personality factors which are thought to be beneficial were related to coping strategies which were predicted to be functional, whereas less functional coping strategies were inversely related to these beneficial or desirable personality factors. The COPE was also found to show discriminant validity. Even though the COPE correlated as predicted with personality factors the correlations were not very strong, therefore these factors are not identical. The COPE scales were also relatively unrelated to other measures of coping styles, monitoring and blunting, which were also included in the study, therefore they were not measuring the same thing, rather complementing each other.

As mentioned above, the COPE was designed to assess both general ways of coping and coping with specific situations. Thus, the third and final study examined the applicability of the COPE to assess situational coping and the relationship between those two types of coping. The dispositional version of the COPE (assessing how one *usually* copes with stressful situations in one's life) was administered to 128 students at the beginning of an academic semester. Three weeks later those same students were asked to answer the COPE with a particular stressful situation in mind. Each student was asked to think of and describe a particular stressful event which they had experienced within the last 2 months and complete the COPE with this in mind. The results showed that subjects used more *active coping, more seeking of social support for instrumental reasons, more positive reinterpretation and growth, more turning to religion* and *more mental disengagement* as their usual way of coping than when they were coping with a specific situation.

The COPE scales internal consistency.

When assessing the internal consistency of the COPE, Carver and colleagues found it to be acceptably high, all scales, apart from one (mental disengagement) gave Cronbach's alpha above 0.6. In the empirical study described here the COPE scales were also tested for internal consistency. This showed that most scales (on average over the 3 times of measure) had internal consistency exceeding 0.6, with the majority of scales above 0.8 (see table 5.1.1.). For some reason though, at discharge patients seemed not to see the connection between the items belonging to the scales mental and behavioural disengagement (alpha of .38 and .28) while at 2 and 12 months follow-up the connection was there.

Table 5.1.1. Internal consistency (Cronbach's alpha) for each coping scale at each time of measure.

Coping scale	Discharge	2mth	12mth
Acceptance	.84	.86	.89
Restraint coping	.74	.82	.68
Active coping	.76	.79	.68
Seeking social support for emotional reasons	.72	.76	.78
Positive reframing	.75	.65	.71
Planning	.84	.72	.71
Humour	.93	.93	.87
Seeking social support for instrum. reasons	.63	.60	.30
Religion	.83	.86	.83
Suppression of competing activities	.57	.58	.52
Mental disengagement	.38	.55	.53
Focus on and venting of emotions	.71	.88	.79
Denial	.58	.58	.69
Alcohol/drug use	.89	.94	.96
Beh. disengagement	.28	.81	.78

Test retest reliability of the COPE.

Carver et al., obtained test retest reliability evidence for the COPE, using two samples who were tested over 6 and 8 week periods. Reliability was found to range from 0.42 to 0.89 for different scales with the highest for coping by religion and lowest for behavioural disengagement. These findings suggest, that coping strategies as measured by the COPE are relatively stable.

Procedure for use of the COPE.

The COPE was used at three different time points in this study, at discharge, 2mth and 12 mth follow up. (Another type of coping assessment, which results will not be reported here, was used at 6 mth follow-up. This included open ended questions asking patients specifically what they did to cope with certain aspects of the illness). At each time the COPE's questions were read out to the patient and their responses noted down. On each assessment occasion patients were asked how they were coping with their heart attack at that particular time. In addition, at 12 months follow-up they were also asked to look back over the year and report how they felt they had coped. Finally, also at the 12 month data point, 30 items of the COPE were selected, and the patients asked how they usually coped with stressful situations in their lives. The 30 items used for this assessment were the 30 most frequently reported coping responses given by the patients for coping with the MI. All available discharge data (n = 70 patients) was analysed in order to get a selection of items for this assessment, as the complete version of the COPE was considered too long. The COPE was in this manner used both to assess situational coping (coping with the MI) and dispositional coping (usual way of coping with other stressful situations). This last part was added on, in order to see how and if coping with an illness, in this case MI, differed from how people usually coped with stressful situations in their lives.

5.2. Causal attribution measure.

In order to examine a wide range of causal attributions a variety of different assessment methods was used. This included an assessment of spontaneous attributions, provoked attributions, checklist attributions, rank

order of attributions according to importance and finally an examination of causal chains. These measures were both empirically and theoretically constructed and partly based on methodology introduced by Paul Norman (1991). The instrument created including all the above methods was called the CAUSE.

Spontaneous causal attributions.

The attribution assessment started by an open ended question to assess spontaneous attributions. As was pointed out in chapter 3 of this thesis, attribution theory predicts that people spontaneously engage in causal attributional search if they are faced with an unexpected, unwanted negative event. This question was developed in order to test this prediction by examining whether patients mentioned causal attributions if asked an open question about their illness. Furthermore, to elicit a few ideas of the patient's own thoughts about their condition, rather than to evaluate their medical understanding or responding to questions with demand characteristics. This question was developed in the beginning of the study and initially patients were asked:

"I wonder if you could tell me what your thoughts about your illness are now. I am not interested in the medical facts or how the nurses and doctors see it, but rather what you think about it now."

This version was however discontinued after interviewing 3 patients who found it confusing. The researchers also found that it did not read well. A new version was therefore developed which was kept unchanged till the end of the study. Thus, spontaneous causal attributions were measured by the question:

" I wonder if you could tell me, when you think about your illness what do you think about?"

All responses were written down, word for word.

Provoked causal attributions.

The next part of the causal attribution questionnaire examined so called provoked attributions. This was also an open ended question but this time the patients were directly asked about a cause, i.e., attributions were provoked. The question was as follows;

"Many people who have had a heart attack, develop some sort of ideas about how they got it. In other words, even though we don't know all the causes of a heart attack, most people have some ideas or theory about why they have it. I wonder what kind of ideas you have had?"

(This wording was paraphrased from Taylor and colleague's (p. 492, 1984) cancer study).

Again all responses were written down, word for word.

Checklist attributions.

The third part of the causal attribution questionnaire consisted of a list of 34 items (checklist attributions), including possible causes for an MI. This list was drawn from previous research in this area (Naea de Valle & Norman, 1992; Koslowsky et al., 1978). 22 items were taken from a study carried out by Naea de Valle and Norman (1992) where they assessed casual attributions made by pre-operative coronary patients. This attribution list was based on research findings where patients with MI (Baxter, 1987) had been asked open ended questions about the causes for their illness. Naea de Valle and Norman's list also included items which had been drawn from a list put together by Affleck et. al. (1987) when interviewing patients with cancer. The remaining 12 items, used in the present study, were either chosen from an attributional list used by Koslowsky et al. (1978), when assessing causal attributions following a first MI (9 items) or added by the author (3 items).

The full 34 item list included the following 22 items from Naea de Valle and Norman (1992): *Stress, worry, eating fatty foods, type of work that I do/did, overwork, high levels of cholesterol, it is in the family, smoking, being overweight, by chance, fate, high blood pressure, poor diet,*

environmental factors, arguing with people, over exertion or sudden exercise, lack of exercise, driving or being caught up in heavy traffic, depression, drinking excessive amounts of alcohol, by the way other people treat me, and *listening to other peoples problems.*

The 9 items chosen from Koslowsky and colleagues (1978) included: *Working too hard, stress at work, nerves, punishment for doing wrong, payment for sins, bad luck, will of God, problems with my children* and *problems with my spouse.*

In order to have some direct way of assessing if patients engaged in other-blame, blamed their own character or overall attributed the illness to themselves, the following three items were added to the above list by the author: *myself, other people* and *the kind of person I am.*

Each patient was asked to indicate which ones of those 34 items they thought either had caused their illness, might have caused it or had not caused it. The responses were rated on a three point scale, adopted form Naea de Valle and Norman's study (1992); *No, Might have* and *Yes.* At discharge the 34 items were read out one at a time by the researcher and answers ticked off. At later follow-up the patient was handed a list with the items and asked to look at each one and say which ones they thought had either caused their illness or might have caused it. The researcher wrote down the answers.

After going through the checklist attributions the patients were asked if there was anything they would like to add to the list that they thought might have caused their heart attack.

Most important attributions.

The next task included in the causal attribution questionnaire was to ask the patients to rank the 3 most important causes they had said "yes" to, so that the most important cause was mentioned first, the second most important next and the third most important one last. Like before the responses were written down by the researcher. Initially this was carried

out by laying down cards in front of the patient including all the causes they had responded "yes" to while going through the checklist. The patient was then asked to look at the cards and pick what they thought were the 3 most important causes for their heart attack and lay them down in order of importance. However, laying down the cards and sorting them out added from 5 to 8 minutes to an already very long interview, especially when patients had picked many causal items as definite causes. Therefore, due to the length of the interview this method was discontinued after the first 10 interviews. After that the researcher read out all the causes the patient had said "yes" to and asked about the importance of the causes as indicated on the questionnaire sheet (see Appendix IV).

Causal chains.

The final part of the causal attribution questionnaire assessed Brickman and his colleague's idea (1975), which was later also pointed out by Norman (1991) in relation to coronary heart disease, regarding causal attribution chains. This was carried out in order to see if patients were able to identify how different causes could be related. The question was phrased in the following way:

"Do you think that these things have gone together to cause your illness or do you think one has led to another, that one cause may have caused another?"

All responses were noted down by the researcher. This completed the causal attribution assessment.

5.3. Distress measure.

Distress was measured using the Hospital Anxiety and Depression scale (HAD) developed by Zigmond and Snaith (1983). This instrument was developed as a self assessment mood scale specifically designed for use with patients with physical illness. It is very brief, includes 14 items and excludes somatic items which are likely to be derived from physical illness. It provides a measure of both anxiety and depression in two independent sub-scales, 7 items in each scale with four point response alternatives, ranging from 0 to 3. To provide a total score of either anxiety

or depression the responses to the 7 items for each scale are added together, each scale can therefore have a score from 0 to 21. The scores are described as "*normal*" if ranging from 0-7, as "*borderline*" if they fall between 8-10 and "*morbid*" if between 11-21. The HAD can be used both as separated individual sub-scales, depression versus anxiety, or as a combined scale giving a total score of distress. The study described here used both versions.

The HAD was validated using a sample of 100 patients attending general medical outpatient clinics. The results showed that the items in each scale were all significantly correlated. This also identified sub-scale scores and showed that the two sub-scale scores could be used to measure severity of both depression and anxiety. Furthermore, the scales were found to have discriminant validity, i.e., each scale assessed different aspects of mood disorder and finally scale scores were found to be unaffected by physical illness.

The internal consistency (Cronbach's alpha) for the HAD sub-scales examined in the present study, was found to be above 0.7 at all times of measure (see table 5.3.1.).

Table 5.3.1. Internal consistency (Cronbach's alpha) for the HAD's anxiety and depression sub-scales at each time of measure.

Scale	Discharge	2mth	6mth	12mth
Anxiety	.83	.85	.86	.90
Depression	.71	.81	.80	.86

Like the other measures used in this study, the assessment of distress was for each particular time point and the items on the HAD were read out by the researcher and ticked off on the questionnaire sheet.

As this review of the measurement tools has made clear, all responses for all questionnaires were written down by the researcher. This was done in order to allow for consistency, as initially some patients might have been too unwell to be able to complete the questionnaires themselves.

To conclude this discussion of the study measures, a table showing a summary of measures and at which time point they were used, is presented below.

Table 5.3.2. Summary of measures at each time point.

Measures	Time when used			
	Discharge	2 mth	6mth	12mth
COPE	yes	yes	no	yes
CAUSE	yes	yes	yes	yes
HAD	yes	yes	yes	yes

5.4. Data coding.

The data for the COPE and the HAD were coded as has been outlined above, i.e., by adding together the scores for all items in each scale. This gave information on how the patients were coping and their level of anxiety and depression as well as their overall level of distress.

The data from the causal attribution questionnaire, the CAUSE were coded in the following way:

The first task in coding the causal attribution data was to put the previously mentioned 34 checklist items into 7 categories. This was carried out in order to be able to assess the amount of self-blame, both character - and behaviour self-blame, as well as other categories of attributions. Creating such categories or scales of attributions would also

provide a better relationship assessment between the coping scales and the causal attributions.

In order to do this, 10 judges, all psychologists, were given the checklist containing the 34 items and asked to put each item into one of 7 categories of: *behavioural self blame, characterological self blame, other blame, circumstances, biology, chance and God.* Before completing this task the judges were asked to do this on an individual bases and not to discuss their results with the other judges involved (see Appendix V).

All of the aforementioned categories apart from two, have been used before in the literature (see chapter 3). The categories *biology* and *God* were created by the author. This was done in order to make it easier for the judges to fit all the items into categories. As it turned out the majority of the judges felt that they needed both of these categories, all agreed that the biology category was necessary but there were mixed feelings about the category "God". Amongst the judges there were some people who looked at God as chance and others who considered God to be unrelated to chance or any other category, so the final decision was to keep it as a separate category.

After gathering the responses from the 10 judges, each item was put into a category if over 65% of the judges agreed on its place. The definition of the 7 categories and their content is described below:

Behavioural self blame: refers to when people blame their own behaviour for the event. This category included 11 items from the checklist; *stress, working too hard, smoking, eating fatty foods, being overweight, poor diet, arguing with people, lack of exercise, drinking too much alcohol* and *listening to other peoples problems.* Raters agreement = 65%.

Characterological self blame: was defined as blaming ones own character or personality for the event. This included 5 items; *myself, worry, nerves, depression* and *the kind of person I am.* Raters agreement = 75%.

Other-blame: blaming other people for the event. This included 4 items from the list; *other people, by the way other people treat me, problems with my children* and *problems with my spouse.* Raters agreement = 80%.

Circumstances: This includes attributing to the environment or factors that are external to the person, including the 5 following items; *type of work that I do/did, overwork, driving or being caught up in heavy traffic, environmental factors* and *stress at work.* Raters agreement = 85%.

Biology: causes are focused on the individual's biological factors. This included 3 items; *high levels of cholesterol, high blood pressure (BP)* and *it is in the family.* Raters agreement = 100%.

Chance: Attributing to chance or fate. This included 3 items from the list; *by chance, fate* and *bad luck.* Raters agreement = 100%.

God: This category refers to when people focus their attributions on God or religious beliefs. This included 3 items; *Will of God, payment for sins and punishment for doing wrong.* Raters agreement = 85%.

The internal consistency of the categories is given in table 5.4.1.

Table 5.4.1. Internal consistency (Cronbach's alpha) for the causal attribution checklist categories at each time of measure. (Scores: 1 = no, 2 = might have and 3 = yes).

Category	Discharge	2mth	6mth	12mth
Behaviour self blame	.59	.49	.35	.25
Character self blame	.59	.53	.23	.29
Other-blame	.61	.65	.46	.45
Circumstances	.61	.60	.57	.47
Chance	.49	.54	.65	.63
Biology	.19	.26	.27	.13
God	.18	.63	.04	.20

This analysis shows that in this case attempting to get all items together into causal attribution categories resulted in clusters of relatively independent causal attributions being grouped together. The same low internal consistency was found when using factor analysis to group the items. However, as pointed out by Billing and Moos (1981), psychometric estimates of internal consistency may have limited applicability in measures of this kind, as one response in each category may be sufficient as an explanation for the event. This might therefore account for the categories low internal consistency. Given the advantage of having items sampled together for data analysis simplicity (Carver, 1989), these 7 categories were kept in the study in order to provide total scores of causal attributions.

The second part of coding the responses on the CAUSE was to code the answers to questions 1 and 2. The spontaneous attributions (responses to question 1) and the provoked attributions (responses to question 2) were coded in the same way. This was carried out by 2 independent raters, one was the author of this thesis (rater 1), the other (rater 2) a lawyer, who had no prior knowledge of the content of those measures or what they were meant to achieve. Each rater was first of all presented with the responses to question 1 (spontaneous attributions) and asked to put them into pre-structured categories. Rater 1 went through all given responses at all assessment times. Rater 2 picked 30 participants out of a hat at each assessment time and coded their responses. In order to make sure that all participants were picked by the second rater at least once, all 30 numbers which had been picked for one assessment point were excluded when it came to picking numbers for the next time point, etc., etc. This same procedure was carried out for responses to question 2 (provoked attributions). The instructions given to both raters were as follows:

"These are answers given by patients following their first MI. We are interested in coding their answers and putting them into categories according to the statement given below. Before you start, please read the statement carefully:

"A causal attributional (CA) statement is a statement that explains or explores the reasons or causes for a particular event or class of events, where event refers to a reported outcome or behaviour or situation." (Taken with permission from Christine Barrowclough PhD thesis, p. 55, 1991).

Your task is to:

1. Please, indicate whether you think the patient has made a causal attribution statement by following the definition for a causal statement given above. Use the table below to list your answers.

2. If a causal attribution is made, is it one of the ones mentioned on the 34 item list?

3. If the causal attribution is not on the list, please write what it is and if the patient said "Don't know" write that down.

4. Which of the 7 categories does it belong to?

and finally

5. Does the patient say "Why me", "Why did it happen" or "Both" .

The raters were given the 34 item checklist and the list including the 7 attribution categories described previously.

The table included the following items to be completed by the raters:

Subject number.
Causal attribution is made "1=no", "2=yes".
Causal attribution number on the list, from 1 to 34.
If the causal attribution is not on the list, please state below what the attribution is and also state here if response was "Don't know".
Category number, 1 to 7.
"Why me=1", "Why did it happen=2" and "Both=3". (see Appendix V for a copy of this table).

After both raters had completed this task their coding for all 5 tasks was compared and the average rater agreement for all 4 measurement times for spontaneous attributions was found to be: 93.2% for task 1, 95% for task 2 and 3, 93% for task 4 and 98% for task 5. For provoked attributions raters agreement for task 1 to 4 was 95% and 98% for task 5.

The rest of the attribution questionnaire was used in its original form mostly for descriptive purposes.

5.5. Data analysis.

The statistical analysis reported in this study were all carried out using the Statistical Packages for the Social Sciences (SPSS-PC) (Norusis, 1990). All analysis was solely carried out by the author with statistical advice from a statistician, Beth Pollard as well as the thesis supervisors, Professors Marie Johnston and Derek Johnston.

5.6. Data screening.

Prior to analysis the data was examined through various SPSS-PC programs for accuracy of data entry, normality, missing values and outliers. To reduce extreme skewness and kurtosis certain scales were either square root or logarithmically transformed (Tabachnick & Fidell, 1989). Since these methods did not seem to have an effect on the results of the analysis, the data were used in its original form for multivariate analysis. Missing data included 9 patients who had not completed answering the COPE in relation to how they were coping at 12 mth follow up. This was due to unavoidable circumstances which involved new untrained researchers having to take over from one of the projects previous investigators to complete the data collection. As a result of this, data reported in this study is based on 91 subjects, although 100 patients completed all interviews. One exception, is data presented on how patients coped with the MI versus how they reported to cope with other stressful situations in their lives, for these questions full data set, including 100 patients, was available. Few missing values were found and they were

scattered randomly through the data set. In order to replace missing values, means were calculated from available data prior to analysis. Finally, as mentioned on the previous page the study variables were first analysed individually, therefore both outliers and extreme scores were included in those analysis, since as suggested by Tabachnick and Fidell (1989), it is considered a better methodology to see if univariate outliers are also multivariate outliers before deciding what to do with them. A further examination of outliers and extreme scores was therefore carried out when other variables were included in the study. As the results of this analysis showed that univariate outliers were not found to be multivariate outliers, i.e., the same person was not extreme on all variables, at this point it was decided to let outliers remain in the analysis, but steps were taken to reduce their influence, i.e., variables were transformed with the techniques described above. The transformation was undertaken to try to change the distribution of the data as close to normal as possible. In this method outliers are kept in and remain on the tail of the distribution; their impact is however reduced. In this case the results of the analysis did however, remain the same before and after transformation.

RESULTS.

Chapter 6 : Univariate Results.

The results section begins with univariate data analysis (chapter 6), presenting data at each time point as well as over time. This begins by section 6.1. describing univariate coping results, followed by section 6.2. with causal attribution univariate results and finally section 6.3. describing distress results.

Chapter 7 : Bivariate and Multivariate Results.

Chapter 7 starts by assessing bivariate results, beginning with section 7.1. examining whether there is a sex or age difference in how patients cope, what kind of attributions they make and how distressed they are. The next section (7.2.) examines the relationship between causal attributions and coping strategies, both concurrent and over time. The third part (section 7.3.) examines the relationship between causal attributions and distress and asks if they are concurrently related and whether causal attributions predict distress. Finally, the last bivariate section (7.4.) examines the relationship between coping strategies and distress. Chapter 7 also presents multivariate results (section 7.5.), where in a multiple regression analysis both causal attributions and coping strategies are used as predictors of distress. This section also presents results on what are the best predictors of coping strategies and causal attributions. Chapter 7 concludes with section 7.6., presenting a summary of all of the study findings, including univariate, bivariate and multivariate results.

CHAPTER 6.

6.1. Univariate coping results.

This part of the data analysis examined coping strategies as assessed by the COPE with the aim to examine if coping changed over time and whether the 15 COPE strategies could be divided into attention versus avoidant coping using the definition given by Suls and Fletcher (1985).
The univariate coping results are divided into the following sub-sections:

Sub-section 6.1.1. *shows the pattern of coping at each time of measure and how it changes over time.*

Sub-section 6.1.2. *presents data on overall coping (all the 15 coping scale scores put together), and how it changed over time.*

Sub-section 6.1.3. *presents findings on how and if some types of coping strategies were used more or less than others. This was analysed for each time point.*

Sub-section 6.1.4. *presents how different coping strategies were related to one another, all concurrent relationships.*

Sub-section 6.1.5. *assessed whether coping could be grouped into* ***attention*** *versus* ***avoidant*** *coping based on the definition given by Suls and Fletcher (1985).*

Sub-section 6.1.6. *shows the pattern of attention and avoidant coping within each time and over time.*

Sub-section 6.1.7. *asks whether coping at one time predicts subsequent coping.*

Sub-sections 6.1.8. and ***6.1.9.*** *shows whether coping with the MI differed from how the patients reported to cope with other stressful situations.*

Sub-section 6.1.10. *presents a summary of univariate coping results.*

6.1.1. Pattern of coping across time.

The first part of the data analysis was to examine the nature of patients' coping reactions both within each time of measure and across different times. These results are presented below in table 6.1.1. and graph 6.1.1.

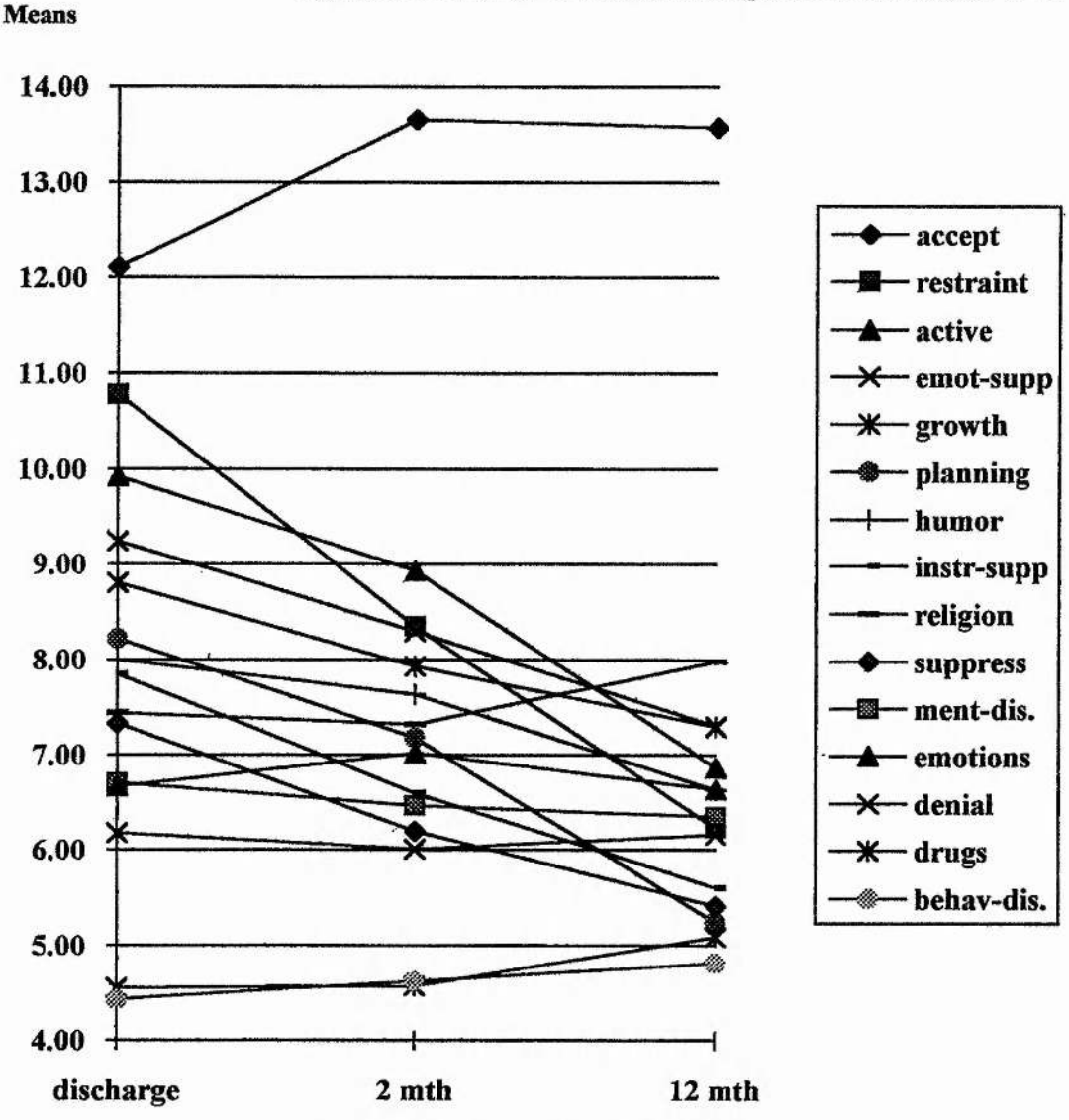
These findings showed that coping by ***acceptance*** had the highest mean at all times of measure, indicating that these patients were right from the start and continued to be, willing to accept that they had suffered an MI. At discharge coping by acceptance was followed by ***restraint coping***, i.e., holding back or waiting for the right time to do things. Next came the use of ***active coping, seeking of social support for emotional reasons, thinking positively about the illness (positive reframing)*** and ***planning***. At 2 months follow up this order of coping had changed slightly, ***active coping*** was now reported to be used more than ***restraint coping*** which however still followed closely behind it. ***Seeking of social support for emotional reasons*** and ***positive reframing*** were still reported among the top 5 coping strategies, but now followed by coping by ***humour*** and ***religion***. At twelve months post MI patients reported to cope mostly by ***religion, seeking of social support for emotional reasons, positive reframing, focus on and venting of emotions, active coping*** and ***humour***. The least used coping strategies at all times of measure were coping by ***alcohol and/or drug use*** and by feelings of ***withdrawing or giving up (behavioural disengagement)***.

These results also showed that many coping reactions were more prominent early in the crisis than later. Repeated measures analysis (MANOVA) showed a significant overall effect for 10 scales (table 6.1.2. & graph 6.1.1.). ***Restraint coping, active coping, seeking of social support, positive reframing, planning, humour and suppression of competing activities*** all these coping efforts showed a significant decrease across the 3 measurement points. They all appeared to be used most at discharge but less at 2 and 12 months post MI. ***Acceptance*** and ***alcohol and/or drug use*** on the other hand showed a significant increase across time.

Table 6.1.1. Means, std Dev and F values for all coping scales at each time.

Coping Strategies	Discharge Mean	Discharge Std Dev	2mth follow up Mean	2mth follow up Std Dev	12mth follow up Mean	12mth follow up Std Dev	F(DF=2)	p*
Acceptance	12.11	3.19	13.66	2.90	13.58	3.05	12.49	.0011
Restraint	10.78	3.29	8.35	2.88	6.23	1.90	84.59	.0011
Active coping	9.92	3.19	8.93	2.56	6.87	1.94	46.04	.0011
Supp.for emotions	9.24	3.29	8.30	3.18	7.30	2.74	14.47	.0011
Positive reframing	8.80	3.31	7.93	2.76	7.29	2.36	10.40	.0011
Planning	8.22	3.63	7.18	2.53	5.24	1.48	36.39	.0011
Humour	8.00	3.52	7.63	3.12	6.63	1.90	9.65	.0011
Supp.for instr. reasons	7.85	2.88	6.60	2.33	5.60	1.51	31.19	.0011
Religion	7.44	3.66	7.32	3.87	7.98	3.70	2.71	*ns*
Supp. comp. activities	7.33	2.78	6.20	1.94	5.41	1.41	23.30	.0011
Mental disengagement	6.67	2.42	6.47	2.47	6.35	2.06	.94	*ns*
Focus/venting emotion	6.67	2.80	7.02	3.29	6.64	2.77	.79	*ns*
Denial	6.18	2.47	6.01	2.61	6.16	2.68	.18	*ns*
Alcoh/drug use	4.55	1.87	4.57	1.98	5.09	2.55	3.04	.051
Behav. disengagement	4.43	1.03	4.62	1.90	4.81	1.79	2.18	*ns*

*Significance levels for F values across repeated measurements. N=91



(Minimum score = 4, maximum score = 16).

Graph 6.1.1. Patients coping at discharge, 2 mth and 12 mth post MI.

The pattern of coping was also tested for linearity and quadratic over time (Tabachnick & Fidell, 1989). This was carried out in order to assess whether each coping strategy went in a straight line either up or down over time. These estimates of linearity are presented below in table 6.1.2. The results showed that the 10 strategies that changed over time showed linear relationships. Eight went in a straight line down (negative t-value), showing a steady decline in use over time and 2 showed a straight line going up (positive t-value), indicating a straight increase in use over time. None of the relationships were found to be quadratic. These results can also be visualised by examining graph 6.1.1.

Table 6.1.2. Tests of linearity for each coping strategy over time.

Coping Strategies	T-value	p*
Acceptance	3.82	.001
Restraint	-11.96	.001
Active coping	-8.37	.001
Supp.for emotions	-5.16	.001
Positive reframing	-4.52	.001
Planning	-8.04	.001
Humour	-4.40	.001
Supp.f advice	-8.06	.001
Religion	1.78	ns
Supp. comp. activities	-6.55	.001
Mental disengagement	-1.49	ns
Focus/venting emotion	-.096	ns
Denial	-.035	ns
Alcoh/drug use	2.05	.042
Behav. disengagement	1.87	ns

*=Significance levels for T-values. N=91

6.1.2. Overall coping across time.

Further analysis calculated an overall coping score for each measurement point by adding the scores for all 15 scales together. Table 6.1.3. shows that coping at discharge had the highest mean which then fell at 2 months and fell even further at 12 months post MI and these differences were significant as obtained by repeated measurement analysis. These findings therefore supported the prediction that coping would change over time.

Table 6.1.3. Means, std Dev and F values for overall coping scores at all measurement points (discharge, 2mth and 12mth post MI).

	Discharge		2 mth post MI		12 mth post MI			
	Mean	*Std Dev*	*Mean*	*Std Dev*	*Mean*	*Std Dev*	*F (DF=2)*	*p**
Coping	118.23	20.09	110.79	15.54	101.17	11.90	39.61	.001

*Significance levels for overall F value across repeated measurements. N=91

A test of linearity was also carried out for overall coping, which showed a significant t-value of -3.96, (p = <.001), indicating a straight line relationship in overall coping from one time to another.

6.1.3. Prevalence of aspects of coping.

Another aspect of this data analysis was to examine whether some kinds of coping methods would occur more than others. Tukey pairwise comparison tests, which take into account the number of comparisons being made, were used for this analysis (Montgomery, 1984). The results from these tests showed that the majority of coping strategies were not reported to be used significantly more or less than any other strategies. The only coping strategy that behaved a little different was coping by ***acceptance*** which was reported significantly more often than most other coping strategies at all times of measure. These findings are all presented in tables 6.1.4.(discharge coping), 6.1.5. (2 mth coping) and 6.1.6. (12 mth coping).

Table 6.1.4. Significant difference at *discharge* in the reported use of individual coping strategies: results from Tukey tests.

Coping at discharge	1	2	3	4	5	6	7	8	9	10	11	12	13	12	15
1.Acceptance															
2. Restraint															
3. Active coping															
4. Supp. for emotion															
5. Positive reframing	*														
6. Planning	*														
7. Humour	*														
8. Supp. for advice	*	*													
9. Religion	*	*													
10. Supp comp. activities	*	*													
11. Mental disengagement	*	*	*												
12. Focus/venting emotion	*	*	*												
13. Denial	*	*	*												
14. Alcohol/drug use	*	*	*	*	*	*									
15. Behav. disengagement	*	*	*	*	*	*	*	*							

*** = Significant difference at the .05 level. N=91**

Table 6.1.5. Significant difference at *2 mth* in the reported use of individual coping strategies: results from Tukey tests.

Coping at 2 mth	1	2	3	4	5	6	7	8	9	10	11	12	13	12	15
1.Acceptance															
2. Restraint	*														
3. Active coping	*														
4. Supp. for emotion	*														
5. Positive reframing	*														
6. Planning	*														
7. Humour	*														
8. Supp. for advice	*														
9. Religion	*														
10. Supp comp. activities	*														
11. Mental disengagement	*														
12. Focus/venting emotion	*														
13. Denial	*														
14. Alcohol/drug use	*	*	*	*											
15. Behav. disengagement	*	*	*	*	*										

* = Significant difference at the .05 level. N=91

Table 6.1.6. Significant difference at *12 mth* in the reported use of individual coping strategies, results from Tukey tests.

Coping at 12 mth	1	2	3	4	5	6	7	8	9	10	11	12	13	12	15
1.Acceptance															
2. Restraint	*														
3. Active coping	*														
4. Supp. for emotion	*														
5. Positive reframing	*														
6. Planning	*														
7. Humour	*														
8. Supp. for advice	*														
9. Religion	*														
10. Supp comp. activities	*														
11. Mental disengagement	*														
12. Focus/venting emotion	*														
13. Denial	*														
14. Alcohol/drug use	*														
15. Behav. disengagement	*									*					

* = Significant difference at the .05 level. N=91

How are coping strategies related?

The next 4 sub-sections are all, apart from section 6.1.6., concerned with how individual coping strategies were related to each other and how and if they could be grouped together. The first of these analysis examined relationships between different coping strategies within each assessment time (sub-section 6.1.4.). Based on those results, the next part (sub-section 6.1.5.), examined whether the 15 individual coping strategies could

be grouped together into *avoidant* versus *attention* coping as defined by Suls and Fletcher (1985). The third part (sub-section 6.1.6.), assessed the pattern of these dimensions. Finally, the last section (sub-section 6.1.6.), assessed whether coping at one time predicted subsequent coping, both regarding consistency and change across time.

6.1.4. Concurrent relationships between coping strategies.

How did the coping strategies relate to one another within each assessment time? This analysis, using Pearson's correlation, examined the concurrent relationships between each coping strategy at all assessment times. Tables 6.1.7., 6.1.8. and 6.1.9. display these findings.

The results showed several relationships between different coping strategies. Most of these relationships occurred during the early phases of the illness, i.e. at the discharge assessment point and a number of these remained at subsequent times. Overall, these findings showed that there appeared to be a cluster of relationships between coping strategies which all showed tendencies to pay attention to the situation/illness. These included relationships between coping by *positive reframing, active coping, planning, seeking of social support for both emotional and instrumental reasons, suppression of competing activities* and *restraint coping.* Another type of coping relationships showing inclination towards avoiding the situation itself or avoiding paying attention to it, also emerged to some degree, although not as consistent as the aforementioned ones, at all assessment times. These included significant associations between *mental disengagement, focus on and venting of emotions, denial, alcohol and/or drug use* and *behavioural disengagement.* Coping by *acceptance* was inversely related to most of these "avoidant" strategies, in particular at 2 and 12 months post MI. Coping by *humour* was consistently at all times of measurement, not significantly related to any other coping strategy. A similar finding emerged for coping by *religion*, which was only found to be significantly related to one other form of coping, i.e., active coping at 2 months post MI.

Coping at discharge

Coping strategies	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1. Acceptance	-														
2. Restraint	.10	-													
3. Active coping	***.26****	***.61****	-												
4. Support for emotion reasons	-.06	.23	***.33****	-											
5. Positive reframing	***.42****	***.29****	***.49****	.15	-										
6. Planning	***.33****	***.30****	***.55****	***.29****	***.40****	-									
7. Humour	.09	.12	.09	-.03	.11	.12	-								
8. Support for instr. reasons	.12	***.33****	***.48****	***.39****	***.35****	***.42****	.05	-							
9. Religion	.04	-.04	.00	.08	.08	.00	-.02	.14	-						
10.Suppress other activities	***.30****	***.35****	***.52****	.21	***.56****	***.48****	.12	***.40****	.11	-					
11.Mental disengagement	.10	.16	***.28****	.13	***.28****	.21	.12	.14	-.06	***.47****	-				
12.Focus/venting of emotions	-.21	.12	.20	***.27****	.02	***.25****	-.13	.14	-.00	.16	***.28****	-			
13.Denial	***-.56****	-.00	-.17	-.07	-.07	-.13	.08	-.11	.03	-.06	.13	.21	-		
14.Alcohol/drug use	-.02	-.00	.08	.08	.19	-.05	.00	-.03	-.02	.20	.25	.11	-.06	-	
15.Behavioural disengagement	.05	-.00	.02	.05	.23	.06	-.06	-.11	-.06	.18	.23	.14	.04	***.32****	-

N=91, 2 - tailed significance: * = .01, ** = .001

Table 6.1.7. Correlations between coping strategies at discharge.

Coping at 2 months.

Coping strategies	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1. Acceptance	-														
2. Restraint	-.02	-													
3. Active coping	.11	***.43***	-												
4. Support for emotion reasons	-.17	***.29****	***.30****	-											
5. Positive reframing	.13	.16	***.37***	.04	-										
6. Planning	.10	.14	***.57***	.13	***.43***	-									
7. Humour	.06	-.00	.12	.03	.04	.09	-								
8. Support for instr. reasons	.00	***.28****	***.36****	***.34***	.04	.07	.10	-							
9. Religion	-.00	.18	***.27****	.15	.22	.26	-.08	.05	-						
10.Suppress other activities	-.12	***.42***	***.36***	.21	.23	***.37***	-.09	.21	.23	-					
11.Mental disengagement	***-.34****	.11	-.01	.15	.14	.07	-.03	-.05	.10	***.45***	-				
12.Focus/venting of emotions	***-.27****	.17	.08	***.42***	.08	.08	.09	.13	.05	.23	***.33****	-			
13.Denial	***-.64***	.09	-.13	-.05	.03	-.02	.12	-.12	.09	.08	***.32****	.22	-		
14.Alcohol/drug use	***-.33****	-.08	-.04	-.00	-.19	-.18	-.09	.07	-.02	.-.13	.00	.21	.23	-	
15.Behavioural disengagement	-.14	-.09	***-.27****	-.14	-.04	-.11	-.17	-.17	-.12	.03	.16	.14	.07	***.29****	-

N=91, 2-tailed significance: *=.01, ** = .001

Table 6.1.8. Correlations between coping strategies at 2 months post MI.

Coping at 12 months															
Coping strategies	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1. Acceptance	-														
2. Restraint	.05	-													
3. Active coping	.06	***.61***	-												
4. Support for emotional reasons	-.11	.18	.17	-											
5. Positive reframing	.18	.15	***.31****	.07	-										
6. Planning	-.08	***.52***	***.47***	***.42***	.06	-									
7. Humour	-.05	-.19	-.15	-.08	.10	-.08	-								
8. Support for instr. reasons	-.14	.23	***.37***	***.38***	.16	***.36***	-.05	-							
9. Religion	.14	.06	.08	.10	.17	-.02	-.00	.06	-						
10.Suppress other activities	-.33	***.47***	***.43***	***.35***	.18	***.36***	-.09	***.33****	.02	-					
11.Mental disengagement	***-.59***	.13	.08	.08	-.14	.23	.05	.10	-.10	***.48***	-				
12.Focus/venting of emotions	***-.36***	.21	.06	***.54***	-.01	.25	.01	.20	-.02	***.32***	***.33****	-			
13.Denial	***-.67***	-.15	***-.28****	-.03	-.07	-.05	.10	-.01	-.05	.11	***.54***	***.27****	-		
14.Alcohol/drug use	***-.53***	-.18	***-.27****	-.01	.10	-.11	.15	-.11	-.17	.07	***.45***	.17	***.52***	-	
15.Behavioural disengagement	***-.61***	-.01	.03	.12	-.16	.17	.04	.03	-.15	.21	***.52***	***.32****	***.46***	***.41***	-

N=91, 2-tailed significance: *=.01, **=.001

Table 6.1.9. Correlations between coping strategies at 12 months post MI.

6.1.5. Can coping strategies be grouped into *avoidant* versus *attention* coping ?

Based on the correlation findings presented in the previous section (6.1.4.) and the definition of avoidant versus attention coping, put forward by Suls and Fletcher (1985), the next analysis involved a factor analysis of all the coping strategies. A two factor solution was chosen in order to see whether the coping strategies would group together into those two broader dimensions (avoidant vs. attention). This was carried out for each assessment time and reliability scores calculated for each factor. The results are presented below in table 6.1.10.

Table 6.1.10. A two factor solution for the 15 coping strategies. N=91

	FACTOR 1			FACTOR 2		
Coping Strategies	**Discharge**	**2mth**	**12mth**	**Discharge**	**2mth**	**12mth**
Restraint coping	*.54168*	*.60415*	*.74035*	.22453	.11008	-.13844
Active coping	*.78786*	*.79756*	*.75401*	.22817	-.20232	-.23354
Support for emotions	*.37365*	*.51477*	*.58390*	.34943	.21261	.12271
Positive reframing	*.69916*	*.52367*	*.29422*	.15093	-.11444	-.27362
Planning	*.70589*	*.65383*	*.73375*	.15919	-.16569	.05126
Support for advice	*.61695*	*.44710*	*.60144*	.15106	-.04499	.01804
Supp. comp. activities	*.71306*	*.66909*	*.70631*	.33115	.25908	.29370
Acceptance	*.63798*	.02686	-.11032	-.48795	*-.80675*	*-.86014*
Mental disengagement	.31646	.27146	.27589	*.55449*	*.60343*	*.75723*
Focus/venting emotions	.04402	.32253	.43967	*.69375*	*.56432*	*.45812*
Denial	-.41935	-.01201	-.11777	*.57511*	*.70523*	*.79622*
Alcohol/drug use	.06577	-.21484	-.20966	*.38110*	*.49760*	*.72974*
Behav. disengagement	.05194	-.28306	.13676	*.39943*	*.40673*	*.73652*
Religion	.09812	*.44669*	.12067	-.04021	.04007	-.23192
Humour	.19297	.11549	-.21033	-.04620	-.08941	.14798

After examining the coping strategies which loaded highest on each factor (loaded at least above 0.3), (see Bryman & Cramer, 1992) these results clearly indicated two dimensions of coping which were found to be not significantly intercorrelated (r=.09 at discharge, r=-.02 at 2 mth and r=-.03 at 12 mth). One, in this case factor 1, contained items which could be defined as focusing attention on the source of the situation/illness and/or on ones reactions to the situation/illness. The other, factor 2, included items that focus attention away from the situation/illness and/or on ones reactions to the situation/illness (Suls & Fletcher, 1985). Factor 1, which according to these findings and based on Suls and Fletchers (1985) definition, could be labeled *attention coping,* included 7 items. Factor 2,

labeled *avoidant coping,* included 6 items. Coping by *acceptance* loaded highly on both factors at discharge but belonged with factor 2 at follow up, it was therefore grouped with factor 2 items. Two coping strategies, *humour* and *religion* appeared to be independent, both these items loaded below 0.3 on both factors. One exception was coping by religion at 2 months follow up, where it loaded with attention coping. In general coping by humour and/or religion did however, at least not in this population, belong to the broader dimensions of either attention or avoidant coping.

Cronbach's alpha was calculated, in order to examine whether the coping strategies included in each factor did in fact represent a single idea of either attention or avoidant coping and whether they were internally consistent. Reliability for the attention factor was reasonably high at all times but the avoidant factor was less reliable in particular at discharge. This could be due to effects from the low reliability's of the mental and behavioural disengagement scales at that time (see table 5.1.1.), the avoidant factors reliability did however, increase at follow up. These findings are presented in table 6.1.11. below.

Table 6.1.11. Cronbach's alpha for the two coping factors.

	Discharge	2 mth	12 mth
Attention coping (factor 1)	.80	.71	.72
Avoidant coping (factor 2)	.47	.55	.75

6.1.6. How did the patients use attention vs. avoidant coping and how did that pattern change over time?

The next step was to examine the pattern of these broader dimensions of coping into attention vs. avoidant coping. This included, as was carried out for individual strategies before, assessing mean values and use repeated measure analysis (MANOVA) to test whether there was a significant difference between the use of each strategy over time. These findings which can be found in table 6.1.12. below, showed that there was a significant difference in both attention and avoidant coping over time. A test of linearity was also carried out which found a linear relationship between both attention and avoidant coping over time. For attention

coping t = -12.10, p< .001, indicating that the use of attention coping showed a steady and straight line decline over the 3 assessment points. Avoidant coping on the other hand, had a t = 2.48, p .015, showing a significant linear relationship between avoidant coping over time but towards a straight line increase as time went on. For attention coping these results are not surprising, as it could be expected that patients might not need to be involved and pay attention to the illness as much at a later stage as they did towards the illness onset. Finding an increase in avoidant coping as time passes might perhaps mean that as patients let go of attention coping strategies, avoidant ones take over. This could be examined by for example, looking at whether there is a relationship between attention coping at discharge and avoidant at 2 months post MI.

Table 6.1.12. Means, std Dev and F values for avoidant and attention coping at each assessment time.

	Discharge		**2 mth**		**12 mth**			
	Mean	*std Dev*	*Mean*	*std Dev*	*Mean*	*std Dev*	*F (DF=2)*	*p**
Attention coping	62.14	15.47	53.49	11.20	43.93	8.45	86.87	.001
Avoidant coping	40.65	6.19	42.35	6.26	42.64	6.48	4.45	.013

The next question to be asked was whether there was a difference in the use of attention and avoidance coping within each time. Analysis in the form of paired t-tests, based on the mean scores for each factor, found a significant difference in the use of these ways of coping both at discharge and at 2 months post MI, but not at 12 months. Attention coping appeared to be used more closer to the illness onset than avoidant coping, while 1 year later these coping methods did not differ. These results are displayed in table 6.1.13.

6.1.13. Related T-tests comparing attention and avoidant coping within each time of measure.

	Attention coping					
	Discharge		*2 mth post MI*		*12 mth post MI*	
	T-value (DF=90)	p	T-value (DF=90)	p	T-value (DF=90)	p
Avoidant coping	14.45	.001	8.74	.001	1.21	ns

Although the coping data presented in this thesis has been grouped into those broader dimensions of attention vs. avoidant coping, coping results will however also continue to be presented for individual strategies.

6.1.7. Does coping at one time predict subsequent coping?

This section examines two questions. Firstly, is coping consistent across time? Secondly, does coping change across time, and if so how? This was assessed by correlation analysis.

Section 6.1.3. looked at one form of consistency in coping within time, another way of looking at consistency is to examine the correlations between each coping reaction over the span of the study. Table 6.1.14. shows that individual coping strategies did correlate moderately highly with one another and most correlations were significant. Coping at discharge and at 2 months appeared to be consistent but the lowest stability as could have been expected, was between discharge and 12 months coping. When looking at coping grouped together into attention and avoidant coping this form of consistency continued. On the whole these results revealed a fair amount of consistency in coping across the span of study.

Table 6.1.14. Correlations between the same coping strategy across all measurement points (coping at discharge correlated with coping at 2mth and 12 mth and coping at 2mth correlated with coping at 12mth post MI).

Coping at discharge with	*2mth post MI*	*& 12mth post MI*	*2mth with 12mth post MI*
Acceptance	.40**	.30*	.50**
Restraint	.46**	.10*ns*	.17*ns*
Active coping	.50**	.14*ns*	.20*
Support for emotions	.46**	.30*	.34**
Positive reframing	.36**	.40**	.37**
Planning	.29*	.26*	.12*ns*
Humour	.51**	.53**	.36**
Support for advice	.29*	.40**	.34**
Religion	.72**	.69**	.69**
Suppress other activities	.15*ns*	.23*ns*	.27*
Mental disengagement	.38**	.47**	.32**
Focus/venting of emotions	.39**	.31*	.50**
Denial	.46**	.32**	.33**
Alcohol/drug use	.10*ns*	.39**	.65**
Behavioural disengagement	.25	.12*ns*	.73**
Attention coping	***.49****	***.40****	***.38****
Avoidant coping	***.36****	***.27****	***.57****

N = 91 2-tailed significance: * - .01 ** - .001

This section also examined how different coping strategies were related over time. This was carried out both for the broader dimensions of attention and avoidant coping (see table 6.1.15.) and for all the 15 strategies individually (see tables 6.1.16., 6.1.17. and 6.1.18.).

As can be seen from table 6.1.15., using attention coping at one time did not predict the use of avoidant coping at subsequent times. The same was true for avoidant coping, coping by avoidance at one time did not predict that the patients would use attention coping at a later time. These patients did therefore not seem to change from one form of coping to another over time as suggested earlier.

6.1.15. Correlations between *attention coping* at discharge and 2 mth with *avoidant coping* at 2 and 12 mth & correlations between *avoidant coping* at discharge and 2 mth with *attention coping* at 2 and 12 mth.

	Avoidant coping	
	2 mth	***12 mth***
Attention coping at discharge	.03 ns	-.03 ns
" " " " at 2 mth		-.00 ns
	Attention coping	
	2 mth	***12 mth***
Avoidant coping at discharge	.04 ns	.10 ns
" " " " at 2 mth		.12 ns

Although these broader ways of coping did not seem to predict one another from one time to the next, it was decided to examine how individual strategies were related over time. Considering the number of comparisons being made a Bonferroni test was used to correct the significance level for these correlations. A Bonferroni test takes into account the fact that more than one comparison is being made. This is calculated by working out the total number of comparisons being made, in this case 14, and divide the chosen significance level ($p<0.05$) by this number. The result is treated as the appropriate significance level, which in this case resulted in a $p < .0033$. These results are displayed in table 6.1.16. relationships between coping at discharge and coping at 2 months, table 6.1.17., coping at discharge and at 12 months and in table 6.1.18. which shows relationships between 2 and 12 months coping.

Coping at discharge	Coping at 2 mth post MI														
Coping Strategies	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1. Acceptance		-.11	.05	-.16	.07	.06	.20	-.10	.01	***-.30****	-.24	-.24	-.27*	-.08	-.09
2. Restraint	-.07		***.37****	.23	.11	.09	.10	***.36****	.02	***.27****	.06	.13	-.03	-.09	-.14
3. Active coping	.02	***.31****		.11	.20	.17	.10	.25	.00	.11	-.03	-.00	-.08	.04	-.14
4. Support for emotional reasons	-.21	***.33****	***.28****		.09	.16	.00	***.35****	.18	***.33****	.13	.23	.12	.10	.03
5. Positive reframing	.16	***.27****	.21	-.07		.12	.01	.01	.01	.04	-.09	-.13	-.05	-.02	.05
6. Planning	.14	.10	***.34****	.07	***.34****		.12	.11	-.02	.15	.03	.14	-.15	-.04	-.04
7. Humour	-.13	-.08	-.12	-.06	-.05	-.04		-.04	-.17	-.12	.01	.16	.13	.03	-.15
8. Support for instrumt. reasons	.17	***.27****	***.27****	.08	.13	.20	-.01		.09	***.26***	-.04	-.02	-.16	-.04	-.02
9. Religion	-.04	.06	.06	.04	.12	.18	-.11	.02		.11	-.03	-.00	.11	.03	-.04
10.Suppression of other activities	-.07	.26	.11	-.05	.20	.07	.05	-.07	.05		.16	-.00	.07	-.02	.17
11.Mental disengagement	-.19	.15	.08	-.06	.09	.09	.05	-.01	.00	.10		.20	.20	.20	***.28****
12.Focus/venting of emotions	-.13	.17	.09	.06	.05	.05	-.11	.04	.04	***.29****	***.30****		.06	-.01	-.00
13.Denial	***-40****	.12	-.01	-.08	.03	.02	-.03	-.02	-.02	.08	.16	.21		.10	-.03
14.Alcohol/drug use	-.07	.12	-.12	-.12	.02	-.11	-.17	-.07	-.02	-.00	***.29****	-.04	.13		-.04
15.Behavioural disengagement	.04	-.04	-.07	-.16	.08	-.03	-.17	-.08	-.19	.10	.18	.00	-.02	.03	

N=91, 2 - tailed significance (Bonferroni corrected * $p < .0033$)

Table 6.1.16. Correlations between coping strategies at discharge and at 2 mth post MI.

Coping at discharge.	Coping 12mth post MI														
Coping strategies	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1. Acceptance		.04	.16	-.10	.15	.01	.03	-.01	-.06	-.03	-.08	-.10	***-.27****	-.12	-.07
2. Restraint	.04		.12	.14	.23	.09	.07	***.27****	-.04	***.27****	-.01	.09	-.21	-.12	-.12
3. Active coping	.03	.12		-.00	***.36****	.06	-.01	.13	-.06	.23	-.07	-.00	-.11	.01	-.17
4. Support for emotional reasons	-.14	.04	.07		***.30****	.17	.07	.22	.16	.13	.08	***.29****	.01	.09	.09
5. Positive reframing	.15	.11	.25	.02		.13	.05	.06	-.05	.08	.01	-.07	-.08	-.02	-.12
6. Planning	.11	.19	***.29****	.07	.21		.02	.07	-.05	.18	.03	.10	-.17	-.14	-.06
7. Humour	-.05	-.21	-.10	-.04	.07	-.00		-.11	-.06	-.13	.04	.06	.09	.17	-.08
8. Support for instr. reason	-.11	.21	***.32****	.10	.17	.20	-.11		.07	.19	.09	.02	-.08	-.10	-.09
9. Religion	.05	.00	-.05	.02	.02	.01	-.05	-.06		-.00	-.00	-.10	-.03	-.08	-.08
10.Suppress other activities	-.13	.18	.19	-.02	.16	.25	-.00	-.06	-.00		.26	.05	.02	.08	.15
11.Mental disengagement	***-.33****	.00	.04	.12	-.02	.10	.03	.01	-.09	***.46****		.22	.26	***.32****	.26
12.Focus/venting of emotions	-.05	.00	-.03	***.28****	-.14	.14	-.17	-.05	-.02	.09	.03		-.07	-.02	-.00
13.Denial	***-.33****	-.13	-.11	.08	-.07	-.01	.05	-.05	-.02	.04	.03	-.01		.08	.21
14.Alcohol/drug use	-.08	.03	-.12	-.01	.03	-.12	-.02	-.09	-.03	-.03	.15	.05	.09		.05
15.Behavioural disengagement	.05	.15	.00	***.28****	.24	.25	-.03	-.06	-.02	.03	.03	.14	.00	-.01	

N=91, 2-tailed significance (Bonferroni corrected * $p < .0033$).

Table 6.1.17. Correlations between coping strategies at discharge and at 12 mth post MI.

Coping at 2mth post MI	Coping at 12 mth post MI														
Coping strategies	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1. Acceptance		.14	.17	-.06	.09	-.01	***-.29****	.03	.08	-.19	-.24	-.23	-.25	***-.35****	***-.34****
2. Restraint	-.17		.17	.09	.17	.04	-.08	.20	.12	***.29****	.24	.18	.16	.01	-.05
3. Active coping	.08	.13		-.00	***.36****	-.01	.00	.20	.06	.22	.02	-.01	-.14	-.19	-.18
4. Support for emotion reasons	.03	.07	-.01		.11	-.00	.06	.20	.08	.20	.01	.14	-.14	-.08	-.04
5. Positive reframing	.08	.24	.24	.01		.06	.08	.05	.13	.05	.03	.09	.00	-.15	-.04
6. Planning	.08	.11	.19	-.00	***.33****		.02	.19	.12	.06	.08	-.05	.00	-.14	-.06
7. Humour	.03	-.16	-.07	.08	.17	.07		.02	-.07	-.05	-.04	.00	.01	-.04	-.11
8. Support for instr. reason	.02	-.02	.04	.24	.22	.03	.06		.04	.20	-.15	.07	-.11	-.03	-.13
9. Religion	.08	.02	.07	.09	.09	-.07	-.09	-.00		.08	-.00	-.07	-.09	-.14	-.08
10.Suppress other activities	-.15	.14	.12	.16	.14	.16	-.12	.09	.12		.26	***.29****	.01	-.11	.10
11.Mental disengagement	***-.26***	-.00	-.14	.08	-.03	-.05	.02	-.19	-.04	.24		***.29****	.20	.13	.21
12.Focus/venting of emotions	***-.31****	.00	-.13	***.50****	-.09	.12	-.00	.02	-.02	.23	.22		.14	.12	.24
13.Denial	***-.41****	-.12	-.10	.06	-.05	.09	.12	-.08	.02	.08	***.29****	.17		***.28****	***.29****
14.Alcohol/drug use	***-.41****	-.04	-.08	.09	-.11	-.08	-.03	-.09	-.06	.18	.25	.17	.26		***.38****
15.Behavioural disengagement	***-.42****	.11	.06	.14	-.13	.21	-.06	.04	-.15	.15	***.45****	***.33****	***.32****	.26	

N=91, 2-tailed significance (Bonferroni corrected * $p < .0033$).

Table 6.1.18. Correlations between coping strategies at 2 mth and 12 mth post MI.

A number of significant relationships did emerge from this analysis. For example, coping by ***acceptance*** at discharge was related to less suppression of competing activities and less denial at 2 months. Using acceptance coping at 2 months was also associated with less alcohol and/or drug use, less feelings of giving up or withdrawing (behavioural disengagement) and less coping by humour at 12 months.

If one was coping by ***restraint*** at discharge one was likely to use active coping at 2 months and vice versa. Restraining oneself at discharge was also related to suppressing other activities and seeking support for instrumental reasons at 2 months, these relationships did however not show between 2 months restraint coping and other strategies at 12 months. Only one significant relationship appeared between restraint coping at 2 months and coping at 12 months, this was when using restraint coping 2 months post MI seemed to predict suppression of competing activities at 12 months.

Seeking of social support for both ***emotional and instrumental reasons*** at discharge were significantly related to a number of other forms of coping at 2 months, including restraint coping, active coping, seeking of social support for instrumental reasons and a trend towards significance was found between seeking of social support for instrumental reasons and suppression of competing activities. The power of these coping strategy to predict other forms of coping did however not continue to coping at 12 months neither did they show any significant relationships between 2 and 12 months coping.

To use ***planning*** as a coping strategy at discharge was associated with active coping both 2 and 12 months later and those coping by planning at discharge seemed to think more positively about the illness at 2 months.

Coping by ***mental disengagement, behavioural disengagement, focus on and venting of emotions, denial*** and ***alcohol and/or drug use*** all these coping strategies seemed to be associated with and predict one another to some degree. They also appeared to be related to suppression of

competing activities at subsequent times and were in all cases inversely associated with coping by acceptance.

Finally, coping by ***humour*** or ***religion*** did not predict any other form of coping at subsequent times. ***Suppression of competing activities*** showed a similar result, with one exception where this form of coping at 2 months predicted focus on or venting of emotions at 12 months post MI.

On the whole these correlation results for individual coping strategies did not seem to indicate that one form of what had been grouped as attention strategy was associated with or predicted avoidant strategy. Two exceptions did however emerge, these were coping by ***focus on and venting of emotions*** and ***behavioural disengagement*** at discharge, which both predicted seeking of social support for instrumental reasons at 12 months post MI.

6.1.8. Do patients cope differently with the MI than they do when coping with other difficult situations in their lives?

This section examined how and if coping with an MI would differ from how the patients usually coped (referred to as *general coping*) with difficult and stressful situations in their lives. This assessment was carried out at the 12 month follow up time, where the patients were asked how, looking back over the year, they had coped with the MI and how they usually coped with other stressful situations in their lives. Table 6.1.19. shows means and standard deviations for overall coping obtained by adding all 15 coping scales together both for coping with the MI and general coping. As can be seen there, general coping had a higher mean than coping with MI, a difference that was significant.

Table 6.1.19. Means, std Dev and F values for coping with an MI versus coping with other difficult or stressful situations.

	Coping with MI		General coping			
	Means	*Std Dev*	*Means*	*Std Dev*	*F*	*p**
Coping	**56.62**	**8.21**	**60.17**	**9.00**	**26.13**	**.001**

***Significance levels for overall F values.**

As in previous sections, the 15 coping strategies were divided into ***attention*** and ***avoidant*** coping based on the factor analysis described in sub-section 6.1.5. These two forms of coping were compared for coping with the MI and general coping. The results, which are presented in table 6.1.20. showed that attention coping was reported to be used significantly more for general coping than when coping with the MI, the reverse was true for avoidant coping. Avoidant coping was reported to be used significantly more for coping with the MI than general coping.

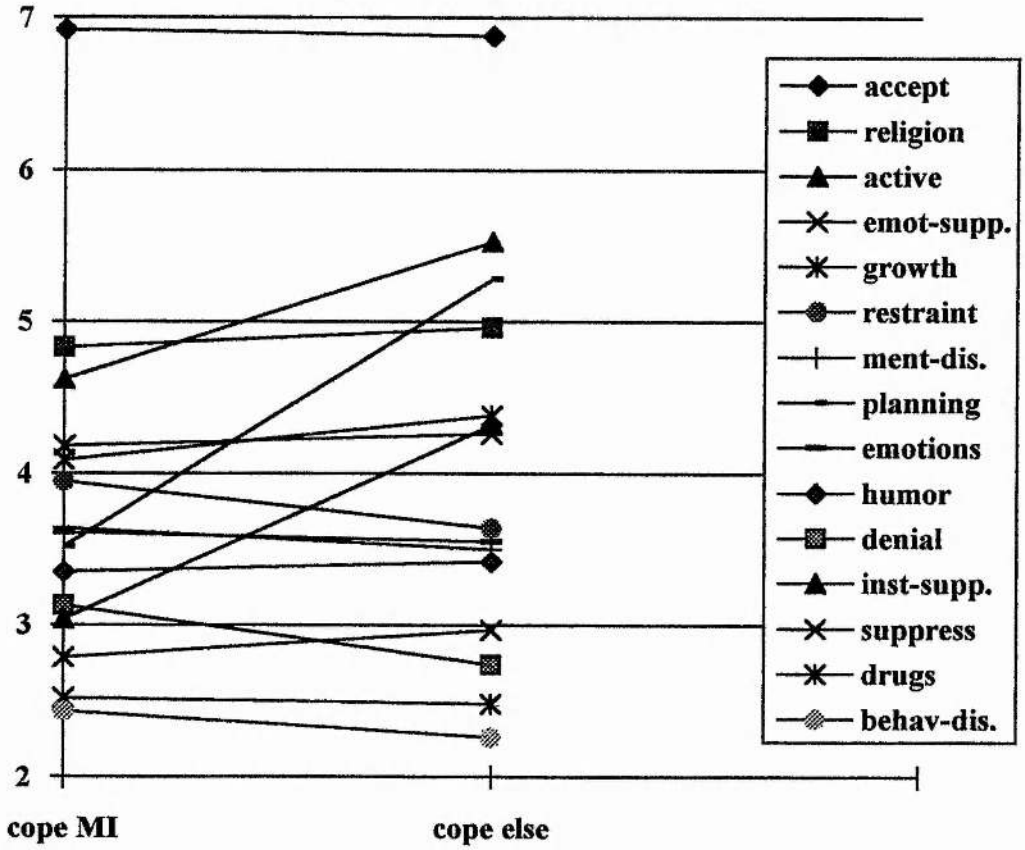
Table 6.1.20. and graph 6.1.2. show means for individual coping strategies for both types of coping. ***Acceptance*** coping as before was most frequent both for general coping and for coping with the MI. This was then followed for coping with the ***MI*** with ***religious coping, active coping, seeking of social support for emotional reasons, positive reframing*** and ***restraint coping.*** For general coping acceptance was followed by ***active coping, planning, religion, positive reframing*** and ***seeking of support for emotional reasons.*** The least used coping efforts were the same for both coping with the MI and general coping, at the bottom were ***behavioural disengagement*** and ***alcohol and/or drug use.***

Table 6.1.20. Means,std Dev and F values for coping with MI and for generally coping with difficult and stressful situations. (The COPE 30 items)

Coping Strategies	Coping with MI *Mean*	*Std Dev*	General coping *Mean*	*Std Dev*	*F(DF=99)*	*p**
Acceptance	6.92	1.67	6.88	1.38	0.6	*ns*
Religion	4.83	2.51	4.96	2.57	2.16	*ns*
Active coping	4.62	1.58	5.53	1.31	32.77	.001
Supp.for emotions	4.18	1.80	4.26	1.81	.57	*ns*
Positive reframing	4.09	1.37	4.38	1.33	4.61	.034
Restraint	3.95	1.42	3.64	1.38	4.50	.036
Mental disengagement	3.64	1.43	3.50	1.20	1.15	*ns*
Planning	3.52	1.12	5.28	1.33	1.15	*ns*
Focus/venting of emotions	3.61	1.63	3.55	1.45	.33	*ns*
Humour	3.35	1.17	3.42	1.22	.92	*ns*
Denial	3.13	1.53	2.74	.98	9.19	.003
Supp for instr. reasons	3.04	1.33	4.32	1.61	45.54	.001
Supp. competing activities	2.79	.97	2.97	1.07	2.38	*ns*
Alcohol/drug use	2.52	1.31	2.48	1.18	.23	*ns*
Behavioural disengagement	2.43	.98	2.26	.76	5.29	.024
Attention coping	26.19	5.93	30.38	5.98	56.48	.001
Avoidant coping	22.25	3.52	21.41	3.23	8.36	.005

*Significance levels for F values.

Means



Minimum score = 2, Maximum score = 8.

Graph 6.1.2. Patients coping with the MI and how they cope with other stressful or difficult situations in their lives.

Table 6.1.20. also shows where there were significant differences in individual coping strategies while coping with the MI versus general coping. Significant differences were found for six coping scales: ***Restraint coping, denial*** and ***behavioural disengagement*** were reported to be used more for coping with the MI. ***Active coping, positive reframing*** and ***seeking of social support for instrumental reasons*** were on the other hand, used more for general coping.

6.1.9. How is coping with an MI related to general coping?

This part examined how coping with an MI related to how the patients coped with other stressful situations. This was assessed by correlating the coping strategies for coping with the MI with general coping. As in previous analysis including a number of comparisons, a Bonferroni test was used to correct the significance level, i.e., $p < .0033$. Table 6.1.21. shows a good deal of consistency in coping when examining how the same strategies correlate across situations, with the lowest correlation being ($r = .39$, $p<.001$) for acceptance and the highest ($r = .93$, $p<.001$) for religion. Using attention coping when coping with the MI was related to using attention coping in general coping, the same result was found for avoidant coping.

Table 6.1.21. also shows significant positive interrelations between situations: restraint coping, active coping, seeking of social support for emotional reasons, positive reframing, planning and religion. Negative associations occurred between using acceptance and active coping when coping with the MI and alcohol and drug use when coping with other situations. Coping by denial with the MI and behavioural disengagement were negatively related to coping by acceptance as a general coping. Finally, those who used focus on or venting of emotions when coping with the MI seemed to be more active in seeking social support for emotional reasons and planning when coping with other difficulties.

Coping with MI	General coping														
Coping Strategies	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**	**13**	**14**	**15**
1. Acceptance	***.39****	.09	.20	.04	.18	.03	.04	.06	.13	.02	-.09	-.01	-.15	***-.34****	-.13
2. Restraint	.09	***.45****	.24	-.12	.12	.16	-.11	-.14	.06	-.12	-.05	-.07	-.21	-.23	.01
3. Active coping	.15	.25	***.40****	.03	***.31****	.23	-.00	-.08	.09	-.03	.08	.04	-.16	***-.27****	.07
4. Support for emotion reasons	.12	.23	.18	***.82****	***.36****	***.26****	.02	***.27****	.18	***.28****	.21	***.52****	.11	-.00	.17
5. Positive reframing	.00	.19	***.29****	.09	***.50****	.24	.21	.24	***.27****	***.31****	-.00	.12	.08	-.02	.06
6. Planning	.12	***.32****	***.40****	.25	***.27****	***.52****	.14	.11	.11	***.37****	.07	.25	.09	-.09	.12
7. Humour	.03	-.14	.06	.01	.08	.19	***.81****	.05	.00	.21	-.01	.12	.08	.03	-.10
8. Support for instr. reason	.03	.25	-.11	.10	.09	.07	-.02	.17	.03	.03	.03	.11	-.00	.00	.20
9. Religion	.02	.01	***.28****	.16	***.29****	.08	-.00	.12	***.93****	.19	.03	.07	-.06	-.15	-.06
10.Suppress other activities	-.00	.08	.11	.19	.20	.24	.15	.12	.06	***.34****	.08	.15	.00	-.03	.04
11.Mental disengagement	-.11	.00	-.09	.04	-.04	.06	-.15	.00	-.01	-.02	***.52****	-.01	.11	.18	.20
12.Focus/venting of emotions	.01	.16	.07	***.58****	.16	***.30****	.13	.23	.05	.25	.14	***.77****	.20	.07	.12
13.Denial	***-.28****	-.06	-.09	.07	-.05	.08	.11	.02	-.06	.07	.13	.17	***.54****	***.34****	.10
14.Alcohol/drug use	-.13	-.08	-.25	-.12	-.16	-.03	.08	-.01	-.23	-.09	.08	.00	.06	***.78****	.22
15.Behavioural disengagement	***-.26****	.09	-.12	-.00	-.18	.05	-.08	-.16	-.12	-.05	.15	.00	-.08	.22	***.66****

Attention coping (MI) with **attention coping** (general): ***.56**** **Attention coping** (MI) with **avodiant coping** (general): .19ns

Avoidant coping (MI) with **avoidant coping** (general): ***.63**** **Avoidant coping** (MI) with **attention coping** (general): .18ns

N=100 2-tailed significance (Bonferroni corrected * P < .0033).

Table 6.1.21. Correlations between coping with MI and general way of coping with difficult or stressful situations .

6.1.10. Summary of univariate coping results.

These findings indicated that the process of coping following a first MI does change over time. Not surprisingly, the overall coping seemed to be most early on, which in this case was a few days following discharge from hospital. Patients seemed to cope by acceptance right from the start, in fact acceptance appeared as the most used coping reaction across all measurement points.

Restraint coping on the other hand reduced across times, it was mostly used as an early response to the illness but was used less as time went on. This was as could be expected when considering the nature of the stressor. These patients had all suffered a major health threat, i.e. an MI. It would therefore not be surprising that they wished to take things easy and restrain themselves from doing anything which might put their health at risk especially in the early stages of the illness. This is also advice which might be expected to be given by health care professionals.

Active coping and planning were other forms of coping which appeared to be used to a considerable extent early in the coping process, both at discharge and 2 months post MI. Patients reported being actively doing something about the situation and planning how to deal with it. This could indicate that they are motivated and willing to take action to prevent them from having another MI for example, by stopping smoking, changing eating habits and taking more exercise. These forms of coping were though reported less at 12 months post MI, which could either mean that the patients consider them at that time to be a part of their everyday life and not a way of coping anymore or that they have given up the changes they did achieve earlier and gone back to their old habits. It would therefore be of interest to see if this form of coping is related to long term behaviour change.

Seeking of social support for both emotional and instrumental reasons was also reported more at discharge than at 2 months and 12 months post MI but was at those times still used to some extent. Patients did appear to try to look for something good or positive in what happened, this coping reaction came quite clearly through at all times of measurement even though it appeared less as time passed. It could be of interest to look at what this kind of positive coping is related to, is it related to a better

lifestyle or is it referring to some form of social life, such as family relations etc.

Religious coping did not change across time, patients either used religion from the start or they did not, i.e. they did not seem to become religious or turn to religion as a way of coping as a result of the event. Other forms of coping which did not change across time were mental disengagement, focus on or venting of emotion, denial and behavioural disengagement. These latter forms of coping are all ways of either avoiding or withdrawing from the situation which according to the findings of this study were methods rarely used by these patients.

One exception from these aforementioned findings was the increasing use over time in coping by using alcohol and/or drugs. This could however, be due to the fact that most of these patients are on medication early on following the illness onset which should maybe not be mixed with alcohol or other drugs. As time goes on they might not need the medication any longer and can therefore use alcohol and other drugs as they like. Another possible explanation for the increase in this way of coping is "social acceptability", it might not "look good" to be drinking alcohol or use other drugs when one has just had a heart attack, but as time passes this might be accepted.

When examining the interrelations among coping reactions several interesting relations emerged. As could be expected, acceptance was negatively related to denial at all measurement times. There also appeared to be some form of grouping together of coping efforts, with one group showing a move forward towards an aim or a goal, including coping actions such as restraint coping, active coping, seeking of social support, planning and positive reframing. The other form of grouping which appeared most clearly between coping at 2 months and coping at 12 months post MI, indicated an impulse to withdraw or avoid any efforts towards dealing with the situation, including coping attempts such as mental disengagement, focus on or venting of emotions, denial, alcohol and/or drug use and behavioural disengagement.

Following these results an attempt was made to group the 15 individual coping strategies, using the definition given by Suls and Fletcher (1985),

into the two broader coping dimensions of ***attention*** versus ***avoidant*** coping. The results from this revealed that the 15 coping strategies, apart from humour and religion, did group together fitting those terms. These are interesting results implying that the patients could score on two coping dimensions rather than just one. This might indicate that the patients could be using one form of coping to cope with one aspect of the illness, while using a different one when coping with another aspect.

Further analysis showed that attention coping seemed to be used more than avoidant coping at both discharge and 2 months, but no difference emerged in the reported use of these strategies at 12 months post MI.

There was also a significant difference in the use of both attention and avoidant coping over time. Reports of using attention coping decreased over time, going in a straight line from high to low from one time to the next. Patients however, reported to use avoidant coping more as time went on, there was a significant increase in avoidant coping over time. This latter finding could however, be due to the increasing use over time of alcohol and/or drugs.

On the whole findings revealed that there was consistency in coping and little change appeared. Attention coping at discharge did not predict the use of avoidant coping at subsequent times and vice versa. When examining individual coping strategies the results showed that strategies grouped as attention coping appeared to predict the use of other attention strategies at subsequent times. The same was true for individual avoidant coping strategies, two exception were however found. Those were coping by focus on and venting of emotions and behavioural disengagement at discharge both avoidant strategies, predicting the use of seeking of social support for emotional reasons, attention coping strategy, at 12 months post MI.

The final sub-section of these analysis assessed whether patients coped differently with the MI from the way they generally cope with other stressful situations in their lives. The findings revealed that patients

reported generally coping more as a whole with other circumstances than they coped with the MI. Furthermore these findings suggest that to some extent people have different ways of coping with an illness such as an MI from the way they usually cope with difficulties in there lives. Attention coping was found to be reported significantly more for general coping than for coping with the MI and the reverse was true for avoidant coping. Certain coping strategies appeared to be used more for coping with the MI, such as ***restraint coping, denial*** and ***behavioural disengagement***.
The use of restraint coping could be explained, as was pointed out earlier, by the nature of the stressor in this case. The other forms of coping which seemed to be used more as coping methods for the MI, i.e. denial and behavioural disengagement could also be related to the nature of the situation. Some patients might feel that there is not a lot they can do to deal with the illness themselves and therefore deny its existence or have feelings of giving up or withdrawing from it, which they might not do in other circumstances. This explanation might also be supported by the fact that active coping, positive reframing and seeking of support for instrumental reasons appeared to be used more for general coping than for coping with the MI.

6.2. Univariate causal attribution results.

This part of the analysis examined the nature of causal attributions when patients were asked either directly or indirectly what they thought had caused their MI. The kind of causal attributions made were explored and based on attribution theory (see chapter 3) it was predicted that: ***The majority of patients would make spontaneous attributions,*** and based on previous research: ***Patient's would be most likely to attribute their illness to stress and smoking.***

The univariate causal attribution results are divided into the following sub-sections:

Sub-section 6.2.1. *reports the kind of spontaneous attributions patients made, the number of patients making spontaneous attributions and how that changed over time.*

Sub-section 6.2.2. *is in the same manner as the above sub-section concerned with provoked attributions, reporting what kind of provoked attributions were made, the number of patients making them and how and if that changed over time.*

Sub-sections 6.2.3. to 6.2.6. all report results on *checklist attributions.*

Sub- section 6.2.3. *reports on the number of patients making checklist attributions and whether that remained the same over time.*

Sub-section 6.2.4. *reports results on the checklist causal categories and how they changed over time.*

Sub-section 6.2.5. *examines how the categories were related within each time of measure.*

Sub-section 6.2.6. *asks whether causal attributions at one time predicted attributions at subsequent times.*

Sub-section 6.2.7. *lists how the patients ranked the causal attributions they made in order of importance.*

Sub-section 6.2.8. *reports results on whether patients saw a connection between the items they mentioned as causes for their MI.*

Sub-section 6.2.9. *gives a summary of univariate causal attribution results.*

6.2.1. Spontaneous attributions.

The first part of the causal attribution questionnaire assessed whether the patients made a spontaneous attribution when asked an open question on what came to their mind when they thought about their illness. The criterion used for defining an attributional statement was as follows: ***"A statement that explains or explores the reasons or causes for a particular event or class of events, where event refers to a reported outcome or behaviour or situation"*** (Barrowclough, 1991, page 55). The reader will recall from chapter 4 that, prior to analysing the responses were rated based on the above definition into whether a causal attribution was made (or not) and if so, what attribution it was. Responses where then rated further into the following 7 causal attribution categories: ***Behavioural self blame, characterological self blame, other blame, circumstances, biology, chance and God.***

-Behavioural self blame refers to blaming ones own behaviour for the event.
-Characterological self blame is blaming ones own character or personality.
-Other blame is when other persons are blamed for the event.
-Circumstances refers to attributing to the environment or factors outwith the person.
-Biology includes medical condition but is neither environment or personality related.
-Chance is attributing to chance or fate
-God is when one attributes to God or religious beliefs.

Finally, answers which included responses such as ***"why me"*** and ***"why did this happen"*** were also rated.

When analysing the answers given, the results did not support the hypothesis that the majority of patients would make a spontaneous attribution. Results did however, show that 20.7% of patients did make a spontaneous attribution when asked at discharge what came to their mind when they thought about their illness. 8.7% did so at 2 months follow up, 12% at 6 months and 8.7% made a spontaneous attribution at 12 months post MI (see table 6.2.1.).

Table 6.2.1. The number (%) of patients making a spontaneous attribution (SA) when asked the question *"I wonder if you could tell me when you think about your illness what do you think about?"*

	Discharge	2 mth	6 mth	12 mth	Cochran Q (DF=3)	p*
Make a SA	20.7%	8.7%	12.0%	8.7%	8.67	.03

***Significance level for Cochran Q test.**

A Cochran Q test, a test used to compare the distribution of a dichotomous variable across three or more assessment times for related samples (Bryman & Cramer, 1992), was used to examine whether there was a significant difference in how many patients made spontaneous attributions over time. The results from this analysis are displayed in table 6.2.1. The findings showed that there was a significant difference in the number of patients making spontaneous attributions over the four measurement points. More patients made a spontaneous attribution at discharge than at follow up. Further analysis assessed, by counting the yes responses, how often over the four times of measure a patient made a spontaneous attribution. The results showed that most patients (25%) who made a spontaneous attribution did so only once, 9.8% on two occasions and 1.1% of patients made a spontaneous attributions three times.

When looking at what kind of spontaneous attributions patients made, one can see from table 6.2.2. that ***smoking, hereditary factors, working*** and ***stress*** were the most commonly mentioned causes for the MI. This did not seem to change across time with only one exception for ***over exertion or sudden exercise*** which showed a significant difference across time. 3.3% reported this as a cause at discharge but nobody did so at follow up.

Table 6.2.2. The kind of spontaneous attributions patients made at each measurement time and the number (%) of patients making each attribution.

Attributions	Discharge	2 mth	6 mth	12 mth	Cochran Q (DF=3)	p**
Smoking	8.7%	3.3%	4.3%	3.3%	4.63	ns
Stress	1.1%	0.0%	2.2%	1.1%	2.00	ns
Overwork	2.2%	1.1%	0.0%	2.2%	2.53	ns
Working too hard	2.2%	2.2%	0.0%	1.1%	2.20	ns
In the family	2.2%	2.2%	2.2%	1.1%	0.47	ns
Drinking alcohol	1.1%	1.1%	1.1%	1.1%	0.00	ns
Poor diet	1.1%	0.0%	1.1%	1.1%	1.00	ns
Exertion/exercise	3.3%	0.0%	0.0%	0.0%	9.00	.02
Type of work	0.0%	0.0%	1.1%	0.0%	3.00	ns
Stress at work	0.0%	0.0%	1.1%	0.0%	3.00	ns
*Other attributions**	2.2%	1.1%	1.1%	2.2%	0.66	ns

*** Other attributions included:** *"my temper"*, *"overdoing it"* (discharge), *"lifestyle"* (2mth), *"pushing myself"*, *"irregular eating"*, *"doing too much"* (6mth) and *"overeating" and "x-ray of leg"* (12mth).
****Significance level for Cochran Q test.**

After categorising the spontaneous attributions results showed that most patients blamed their own behaviour for the MI (see table 6.2.3.). This was followed by attributing to circumstances, biology and self character blame, other attribution categories were not used and no significant differences were found across time. Of those patients who while making a spontaneous attribution attributed to self behaviour blame, 18.5% did so at only one assessment period, 6.5% twice and 1.1% three times. All the patients who spontaneously attributed to circumstances did so once, 4.3% of patients once attributed to biology and 1.1% did so on two occasions.

Table 6.2.3. The number (%) of patients spontaneously attributing to each attribution category at each measurement time.

Categories	Discharge	2 mth	6 mth	12 mth	Cochran Q (DF=3)	p*
Beh. self blame	15.2%	6.5%	6.5%	6.5%	7.38	ns
Ch. self blame	1.1%	0.0%	0.0%	0.0%	3.00	ns
Other blame	0.0%	0.0%	0.0%	0.0%		
Circumstances	3.3%	0.0%	2.2%	2.1%	3.33	ns
Biology	0.0%	2.2%	2.2%	2.2%	0.75	ns
Chance	0.0%	0.0%	0.0%	0.0%		
God	0.0%	0.0%	0.0%	0.0%		

*** Significance level for Cochran Q test.**

As mentioned earlier, when analysing the results of the responses to the above question answers which included remarks such as ***"why me"*** and ***"why did the MI happen"*** where also noted. This assessment found, as can be seen in table 6.2.4., that 7.6% did say ***"why me"*** at discharge, 8.6% at 2 months follow up, 9.8% at 6 months and 3.2% did respond ***"why me"*** at 12 months post MI. Further 14.1% did say ***"why did the MI happen"*** when asked at discharge, 10.8% said the same at 2 months

follow up, 7.6% at 6 months and 4.3% wondered ***"why did the MI happen"*** at 12 months post MI.

Table 6.2.4. Number (%) of patients responding *"why me"* and *"why did this happen"* when asked: *"I wonder if you could tell me, when you think about your illness what do you think about?"*.

	Discharge	2 mth	6 mth	12 mth	Cochran Q (DF=3)	p*
"Why me"	7.6%	8.7%	10.9%	4.3%	3.35	ns
"Why did this happen"	15.2%	10.9%	7.6%	4.3%	7.55	.05

*** Significance level for Cochran Q test.**

It can also be seen from table 6.2.4. that there was a significant difference in the number of patients responding by saying ***"why did the MI happen"*** across the time points of measurement. This response showed a significant decrease over time. The reverse was true for responses saying ***"why me"*** even though this was not a significant result, there appeared to be a slight increase in wondering ***"why me"*** over time with a drop at 12 months post MI. Of the patients who wondered ***"why me"*** 18.5% did so once, 4.3% twice and 1.1% at all assessment points. The majority of patients (27.2%) responded ***"why did the MI happen"*** on one occasion, 3.3% twice and 1.1% at all times.

If all these results are taken together it can be seen that a number of patients did either make a spontaneous attribution or wondered why it happened at all assessment times (see table 6.2.5.).

Table 6.2.5. Number (%) of patients making a spontaneous attribution (SA) or wondering why they had an MI at each measurement time.

	Discharge	2 mth	6 mth	12 mth
Make a SA	20.7%	8.7%	12.0%	8.7%
"Why me"	7.6%	8.7%	10.9%	4.3%
"Why did this happen"	15.2%	10.9%	7.6%	4.3%

6.2.2. Provoked attributions.

The second part of the causal attribution questionnaire examined whether patients made causal attributions when asked openly and directly about what they thought had caused their illness. These attributions were referred to as "provoked attributions". Prior to analysing the answers were rated in the same way as the spontaneous attributions (see chapter 4).

The results from this analysis showed that the majority of patients made a provoked attribution, 81.5% at discharge, 83.7% at 2 months, 84.8% at 6 months and 88% at 12 months follow up, but there was not a significant difference over time (see table 6.2.6). Majority (67%) of patients made a provoked attribution at all assessment times, 14% twice but the rest less often. Most patients (14%) who responded ***"don't know"*** did so only once and only 2.2% responded in this manner at all times.

Table 6.2.6. Number (%) of patients making a provoked attribution (PA) and answering "don't know" at each measurement time, when asked the question *"Many people who have had a heart attack, develop some sort of ideas about how they got it. In other words, even though we don't know all the causes for a heart attack, most people have some ideas or theory about why they had it. I wonder what kind of ideas you have had?*

	Discharge	2 mth	6 mth	12 mth	Cochran Q (DF=3)	p*
Make a PA	81.5%	83.7%	84.8%	88.0%	2.41	ns
Don't Know	18.5%	16.3%	15.2%	12.0%	1.44	ns

*Significance level for the Cochran Q test.

Table 6.2.7. shows what kind of provoked attributions patients made and the most commonly mentioned causes were ***stress, smoking,*** and ***hereditary factors.*** There also appeared to be a significant difference, at least for some of the causes, in how many patients mentioned each one over the 4 times of measurement. Among these were ***smoking***, with fewer patients attributing to it at 2 and 6 months. Attributing to ***stress*** showed a steady increase over time and so did attributing to ***hereditary factors.*** ***Overwork*** was mentioned more at discharge than at follow up. ***Poor diet*** was mentioned more at 6 and 12 months and more patients attributed to ***over exertion or sudden exercise*** at 2 months follow up than at other times. Finally, mixture of attributions called ***other attributions*** in table 6.2.7., showed a significant difference over time. Over 20% of patients did mention a provoked attribution which fell into this group at discharge

and 6 months but less at 2 and 12 months, with the lowest number at 2 months follow up.

Table 6.2.7. The kind of provoked attributions patients made at each measurement time and the number (%) of patients making each attribution.

Attributions	Discharge	2 mth	6 mth	12 mth	Cochran Q (DF=3)	p*
Smoking	33.7%	29.3%	28.3%	39.1%	8.45	.03
Stress	26.1%	34.8%	39.1%	41.3%	9.07	.02
Overwork	13.0%	5.4%	5.4%	5.4%	9.38	.02
In the family	8.7%	18.5%	13.0%	10.9%	8.26	.04
Worry	7.6%	7.6%	8.7%	6.5%	.38	ns
Poor diet	5.4%	4.3%	10.9%	13.1%	10.13	.01
Fatty foods	4.3%	3.3%	3.3%	5.4%	.84	ns
Stress at work	4.3%	4.3%	6.5%	2.2%	2.66	ns
High cholesterol	3.3%	3.3%	3.3%	4.3%	.27	ns
Being overweight	3.3%	3.3%	3.3%	5.4%	1.12	ns
Drinking alcohol	3.3%	2.2%	3.3%	2.2%	.50	ns
Lack of exercise	2.2%	4.3%	4.3%	5.4%	2.28	ns
Working too hard	1.1%	1.1%	3.3%	3.3%	2.18	ns
High BP	1.1%	1.1%	2.2%	2.2%	.75	ns
Diabetes	1.1%	1.1%	0.0%	1.1%	3.00	ns
Exertion/exercise	0.0%	7.6%	2.2%	4.3%	9.72	.02
Type of work	0.0%	2.2%	0.0%	2.2%	4.80	ns
Myself	0.0%	1.1%	0.0%	0.0%	3.00	ns
By chance	0.0%	1.1%	0.0%	0.0%	3.00	ns
Fate	0.0%	1.1%	0.0%	0.0%	3.00	ns
Punishment f wrong	0.0%	1.1%	0.0%	0.0%	3.00	ns
Problems w children	0.0%	1.1%	0.0%	0.0%	3.00	ns
Problems w. spouse	0.0%	1.1%	0.0%	0.0%	3.00	ns
Nerves	0.0%	0.0%	0.0%	1.1%	3.00	ns
Depression	0.0%	0.0%	1.1%	1.1%	2.00	ns
Arguing w. people	0.0%	0.0%	1.1%	0.0%	3.00	ns
Other attributions**	20.7%	8.7%	21.8%	14.2%	8.41	.03

* Significance level for Cochran Q test.

****Other attributions included the following items:**

At discharge: "age", "lack of control", "irregular eating", "dramatic fever", "doing too much", "frustration", "lifestyle", "unfit", "stressful week", "angina", "tablets", "excitement", "guilt", "walking frame", "operation", "sensitivity", "my temper", "overeating", "obsession with work", and "pain".

At 2 mth: "lifestyle", "irritability", "old age", "irregular eating", "irregular sleep", "abuse of body", "overeating", and "wrong diet".

At 6 mth: "age", "ill use of body", "tiredness", "overdoing things", "family problems", "anger", "travel", mothers illness", "easily irritated", ""angina", ""medical treatment", "overeating", "excitement", "irregular eating", "my temper", "being short of money", "parents" and "not enough rest".

At 12 mth: "lack of knowledge", "not enough relaxation", "wear and tear", "overeating", "medical problems", "tablets", "age", "broke my finger", "noise", "November a bad mth", "my temper", "narrowing of the arteries" and "walking from town every day".

The provoked attributions were also rated into the seven attribution categories (see chapter 4). The number of patients attributing to each category can be seen in table 6.2.8. Most patients blamed their own behaviour and there was a significant increase in self behaviour blame over

the 4 times of measurement. Characterological self blame was significantly more at discharge and 12 months than at the other 2 times of measure. There was also a significant difference in attributing to circumstances over time, with most patients attributing to this category at discharge but less at follow up. Finally, attributing to biology seemed to be popular at all times of measurement and it did not show a significant difference over time. Most patients (59.8%) made provoked attributions to self behaviour blame at either 3 or 4 assessment times, 17% only twice and 15% on one occasion. The patients who made provoked attributions to self character blame did so either only once (11%) or twice (2.2%) and nobody more often than that. The same was true for all the other categories, most patients attributed only once or twice to each category.

Table 6.2.8. The number (%) of patients making provoked attributions to each attribution category at each measurement time.

Categories	Discharge	2 mth	6 mth	12 mth	Cochran Q (DF=3)	p*
Beh. self blame	55.4%	69.6%	67.4%	76.1%	13.89	.003
Ch. self blame	7.6%	0.0%	2.2%	5.4%	9.15	.02
Other blame	0.0%	1.1%	1.1%	0.0%	2.00	ns
Circumstances	25.0%	12.0%	13.0%	10.9%	12.94	.001
Biology	12.0%	22.8%	19.6%	20.7%	5.9	ns
Chance	0.0%	1.1%	0.0%	0.0%	3.00	ns
God	0.0%	1.1%	0.0%	0.0%	3.0	ns

*** Significance level for Cochran Q test.**

As when rating the spontaneous attributions responses saying ***"why me"*** and ***"why did the MI happen"*** were also noted when rating the provoked attributions. In this part only 1.1% of patients wondered ***"why me"*** at 2 months follow up, but no patient answered in this manner at any other point of measurement.

6.2.3. Checklist attributions.

Causal attributions were also examined by a list of 34 items of possible causes for an MI which the patients choose from. Table 6.2.9. below shows that patients most commonly mention ***stress*** and ***smoking*** as a cause for their MI at all four measurement points. At discharge and 2 months post MI this was followed by attributing to ***myself, worry, eating fatty foods*** and ***hereditary***. The order of the most commonly mentioned attributions changed slightly at 6 months and 12 months post MI, with ***eating fatty foods*** moving up next to smoking followed by ***high levels of***

cholesterol. Attributing to ***myself*** and ***worry*** fell significantly at 6 months and 12 months and so did attributing to ***hereditary*** factors.

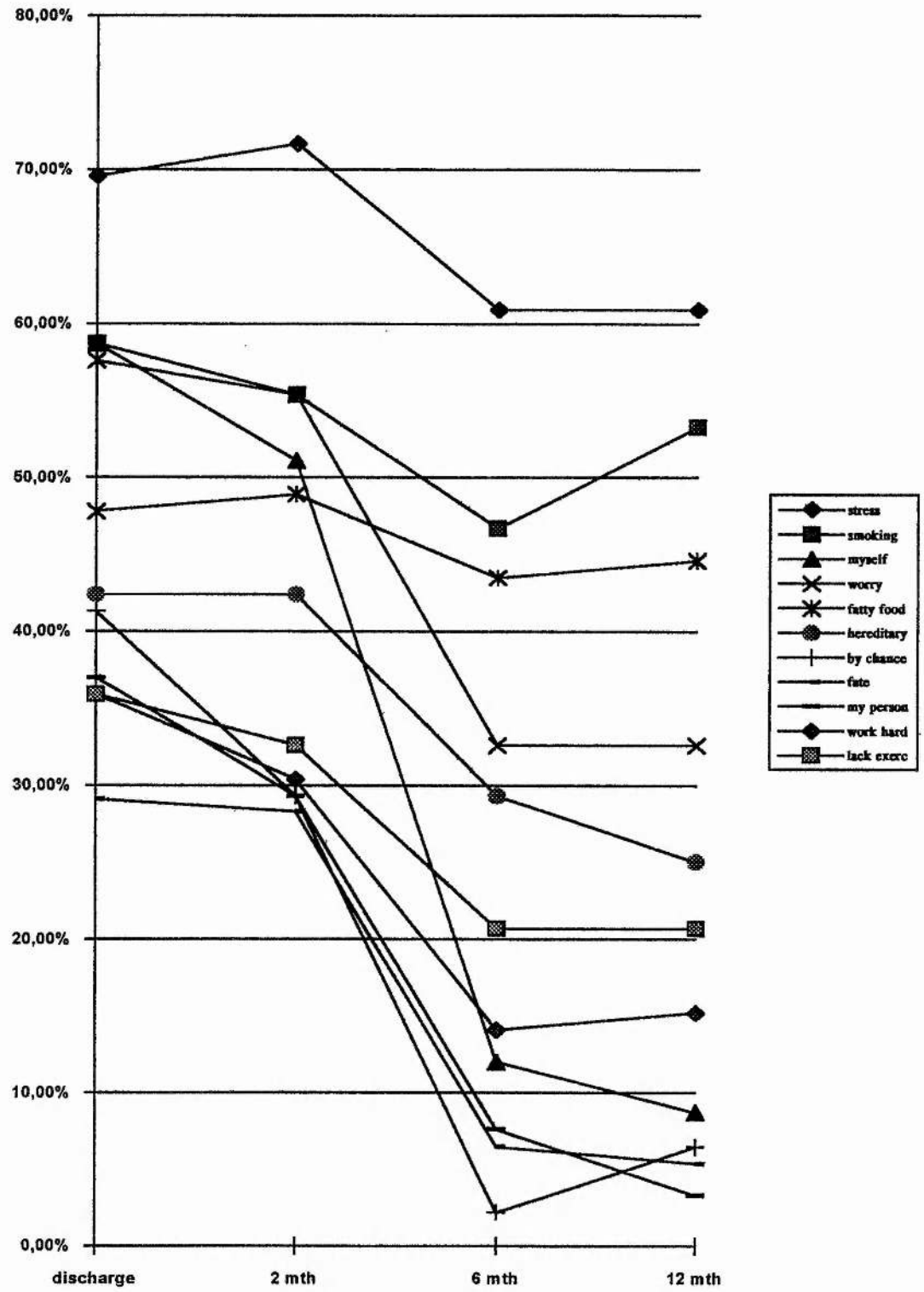
The least mentioned attributions were: ***payment for sins, punishment for doing wrong, by the way other people treat me, problems with my spouse and children*** and ***environmental factors.***

Table 6.2.9. Causal attributions chosen from the 34 item list, the number (%) of patients choosing each item ("might have" and "yes" responses grouped together).

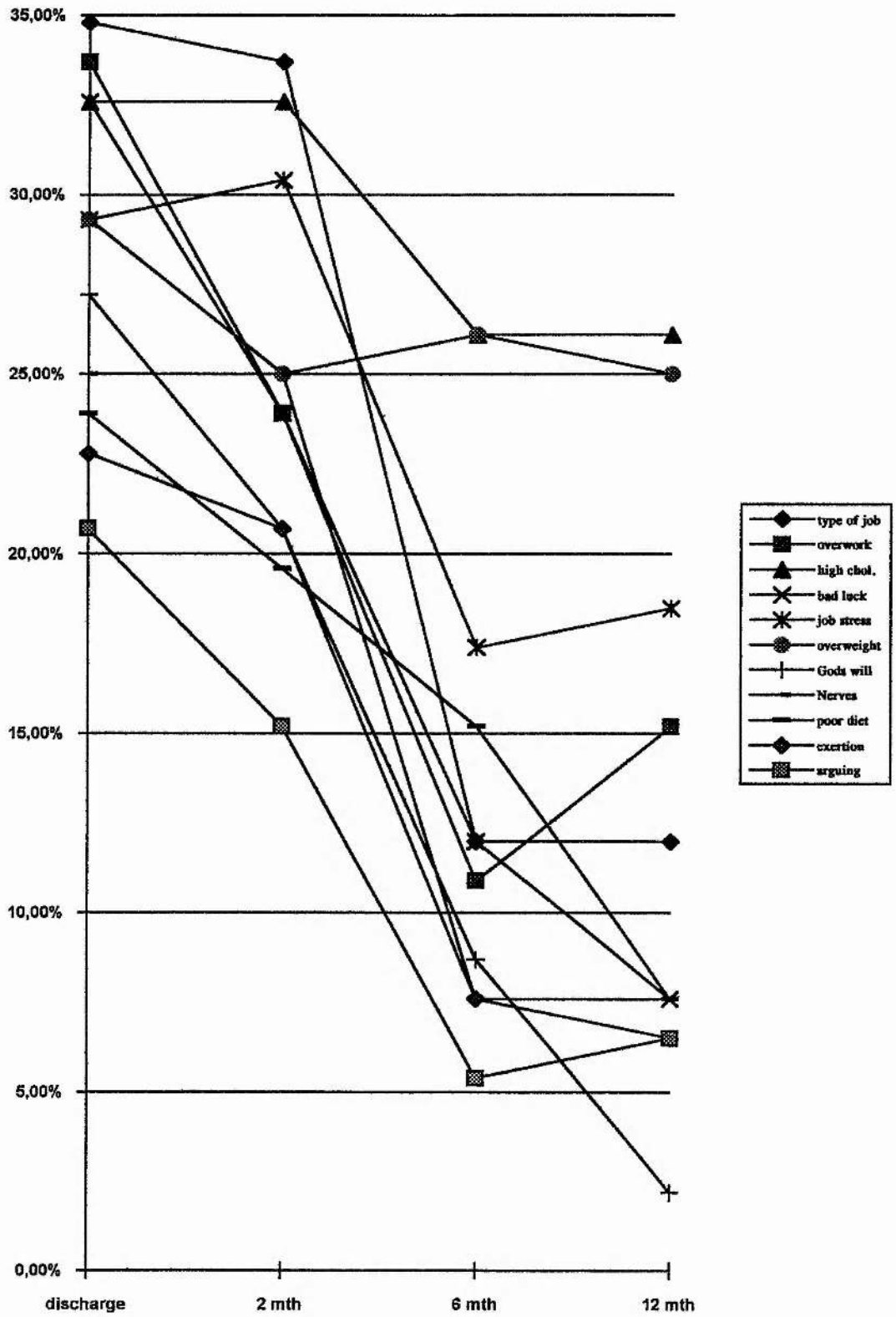
Attribution	Discharge	2 mth	6 mth	12 mth	Cochran Q (DF=3)	p*
Stress	69.6%	71.7%	60.9%	60.9%	6.14	ns
Smoking	58.7%	55.4%	46.7%	53.3%	7.26	ns
Myself	58.7%	51.1%	12.0%	8.7%	89.21	.001
Worry	57.6%	55.4%	32.6%	28.5%	34.38	.001
Fatty food	47.8%	48.9%	43.5%	44.6%	1.72	ns
Hereditary	42.4%	42.4%	29.3%	25.0%	26.60	.001
By chance	41.3%	29.3%	2.2%	6.5%	63.28	.001
Fate	39.1%	28.3%	6.5%	5.4%	50.96	.001
My personality	37.0%	29.3%	7.6%	3.3%	52.85	.001
Working too hard	35.9%	30.4%	14.1%	15.2%	25.88	.001
Lack of exercise	35.9%	32.6%	20.7%	20.7%	13.48	.003
Type of work	34.8%	33.7%	12.0%	12.0%	36.85	.001
Overwork	33.7%	23.9%	10.9%	15.2%	26.53	.001
High cholesterol	32.6%	32.6%	26.1%	26.1%	2.95	ns
Bad luck	32.6%	23.9%	12.0%	7.6%	27.80	.001
Stress at work	29.3%	30.4%	17.4%	18.5%	11.61	.008
Being overweight	29.3%	25.0%	26.1%	25.0%	1.32	ns
Will of God	27.2%	20.7%	8.7%	2.2%	36.79	.001
Nerves	25.0%	25.0%	7.6%	7.6%	27.92	.001
Poor diet	23.9%	19.6%	15.2%	7.6%	13.27	.004
Over exertion	22.8%	20.7%	7.6%	6.5%	20.71	.001
Arguing w people	20.7%	15.2%	5.4%	6.5%	17.47	.001
High BP	19.6%	26.1%	20.7%	16.3%	6.30	ns
Listening to other p.	17.4%	6.5%	0.0%	3.3%	31.58	.001
Drinking alcohol	16.3%	9.8%	13.0%	7.6%	7.22	ns
Caught/heavy traffic	14.1%	7.6%	7.6%	2.2%	14.29	.002
Other people	13.0%	10.9%	5.4%	2.2%	10.91	.01
Depression	12.0%	12.0%	4.3%	7.6%	6.22	ns
Environmental fact.	12.0%	5.4%	0.0%	0.0%	22.36	.001
Problems w children	10.9%	13.0%	5.4%	4.3%	13.09	.004
Problems w spouse	9.8%	6.5%	9.8%	4.3%	4.50	ns
Other p. treatment	8.7%	5.4%	1.1%	1.1%	11.91	.007
Punishment f. wrong	7.6%	8.7%	2.2%	2.2%	8.20	.04
Payment for sins	4.3%	6.5%	0.0%	1.1%	8.80	.03

*** Significance level for Cochran Q test**

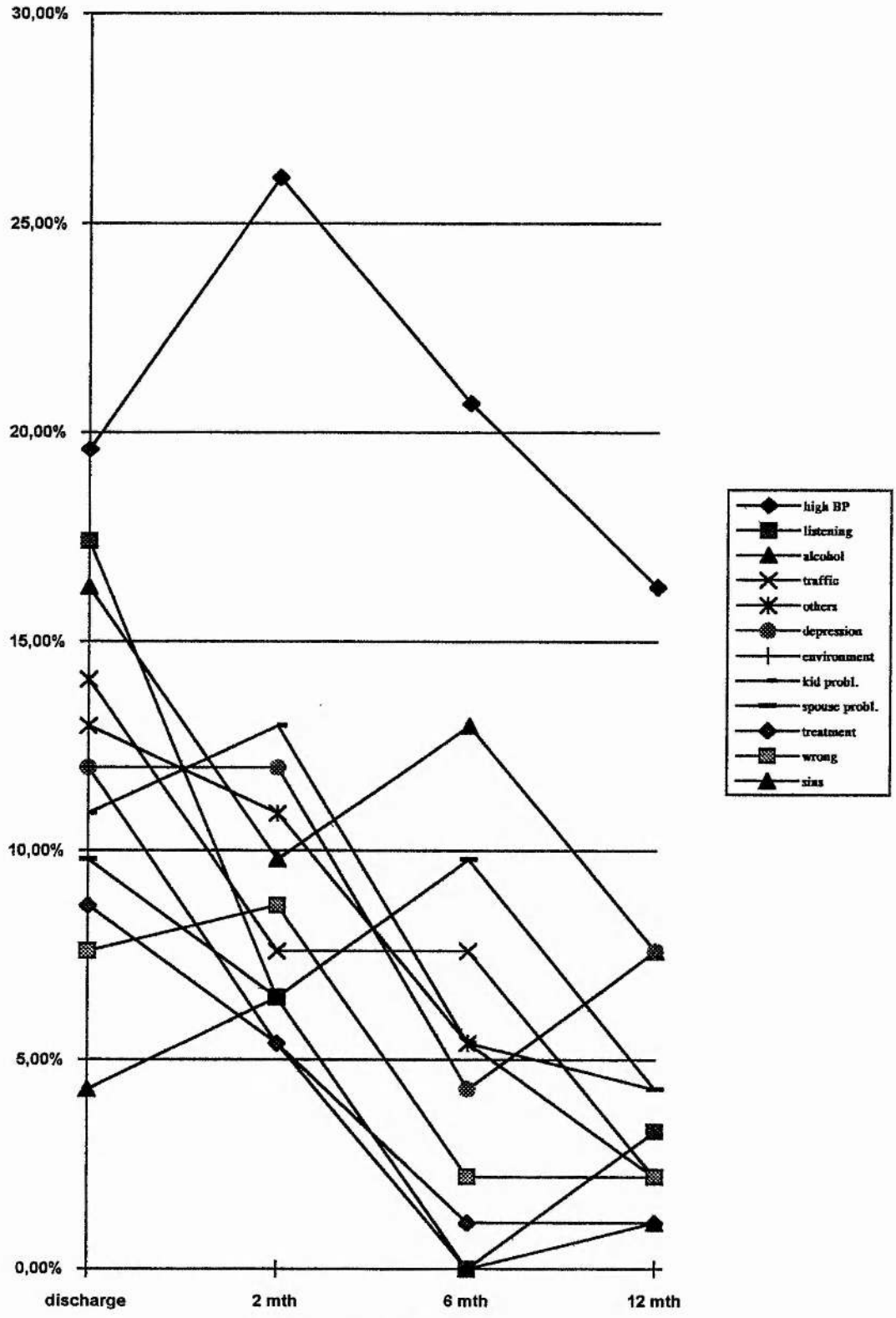
In fact table 6.2.9. shows that there was a significant change for 25 of the 34 items on the list over time. For all of those 25 items there appeared to be a decrease in the number of patients reporting them as a cause for the MI at follow up.(see also graphs 6.2.1a., 6.2.1b. & 6.2.1c).



Graph 6.2.1a. Causal attributions 11 top items as ranked by patients at discharge, chosen from the 34 item list at all 4 times of measurement (% of patients choosing each item) ("yes" and "might have" responses grouped together).



Graph 6.2.1b. Causal attributions 11 middle items as ranked by patients at discharge, chosen from the 34 item list at all 4 times of measurement (% of patients choosing each item) ("yes" and "might have" responses grouped together).



Graph 6.2.1c. Causal attributions 12 lowest items as ranked by patients at discharge, chosen from the 34 item list at all 4 times of measurement (% of patients choosing each item) ("yes" and "might have" responses grouped together).

The items which patients did seem to consistently attribute their MI to, i.e., the ones that did not show a significant change across time, were: ***stress, smoking, eating fatty foods, high levels of cholesterol, being overweight, high blood pressure, drinking excessive amounts of alcohol, depression,*** and ***problems with my spouse.***

When given the chance to add other causal attributions which might not have been covered by the list, very few patients mentioned something else (see table 6.2.10.), but 2.2% reported diabetes as a cause.

Table 6.2.10. Number of patients reporting there was something the list did not cover when given the opportunity to add something else.

	Discharge	2 mth post MI	6 mth post MI	12 mth post MI
Something else	7.6%	5.4%	2.2%	8.7%
Diabetes	2.2%	2.2%	2.2%	2.2%

6.2.4. Causal attribution categories for checklist attributions.

The 34 items from the causal attribution list were grouped together by 10 judges, into the same seven categories as have been used before, of: ***Behavioural self blame, characterological self blame, other blame, circumstances, biology, chance*** and ***God*** (see chapter 5). Means and standard deviations for each category are presented in table 6.2.11.

Table 6.2.11. Means and std Dev for the checklist causal attribution categories at each assessment time.

	Discharge		2 mth		6 mth		12 mth			
Checklist categories	*Mean*	*Std Dev*	*Mean*	*Std Dev*	*Mean*	*Std Dev*	*Mean*	*Std Dev*	*Min*	*Max**
Behaviour self blame	16.89	3.59	16.47	3.18	15.72	2.91	15.82	2.75	11	33
Character self blame	7.99	2.37	7.79	2.28	6.24	1.55	6.11	1.52	5	15
Other blame	4.64	1.35	4.59	1.37	4.41	1.08	4.33	1.50	4	12
Circumstances	6.87	2.13	6.70	2.12	5.88	1.66	5.91	1.58	5	15
Biology	4.54	1.47	4.55	1.49	4.45	1.61	4.33	1.50	3	9
Chance	4.84	1.78	4.33	1.67	3.38	1.09	3.38	1.11	3	9
God	3.58	.94	3.52	1.11	3.21	.60	3.08	.37	3	9

*** The number of items in each category varies, the minimum and maximum figures given are possible min. and max. scores, not actual findings.**

Sign tests were used to examine whether there was a significant difference between times within the same category. This test compares the number of positive and negative differences between two scores from the same sample and ignores the size of these differences (Bramer & Cramer, 1992). These analysis showed a number of significant findings, which are displayed in table 6.2.12.

Behavioural self blame, characterological self blame, circumstances, chance and God: The same result was found for all these categories with significantly more patients attributing to behavioural self blame, characterological self blame, circumstances, chance and God at discharge and 2 months than at the other two times of measurement.

Other blame: Patients blamed others for their illness significantly more at discharge, 2 and 6 months than at 12 months follow up.

Biology: No significant results were found between times for attributing to biology items.

Table 6.2.12. Sign tests comparing differences between the same causal attribution category over the four measurement points (negative differences=increases in ratings, positive differences=decreases in ratings).

Time of measure	Behaviour self blame				Character self blame				Attribution Categories Other blame				Circumstances				Biology				Chance				God			
	+	-	ties	p*	+	-	ties	p	+	-	ties	p	+	-	ties	p	+	-	ties	p	+	-	ties	p	+	-	ties	p
Discharge & 2mth	37	37	18	ns	34	37	21	ns	12	15	65	ns	27	29	36	ns	28	27	37	ns	26	43	23	.05	12	17	63	ns
Discharge & 6mth	20	52	20	.001	11	61	20	.001	8	18	66	ns	10	46	36	.001	24	27	41	ns	6	52	34	.001	6	26	60	.001
Discharge & 12mth	28	47	17	.001	8	61	23	.001	3	22	67	.001	10	41	41	.001	20	32	40	ns	9	53	30	.001	3	30	59	.001
2 mth & 6 mth	27	45	20	.04	13	64	15	.001	10	16	66	ns	13	34	45	.003	21	25	46	ns	6	41	45	.001	4	17	71	.001
2 mth & 12 mth	26	47	19	.01	9	61	22	.001	4	19	69	.002	11	35	46	.001	21	34	37	ns	6	40	46	.001	2	19	71	.001
6 mth & 12 mth	32	36	24	ns	21	21	50	ns	3	11	78	.05	12	14	66	ns	13	18	61	ns	10	8	74	ns	1	8	84	ns

6.2.5. How did the checklist attributions categories relate to each other ?

The seven attribution categories were correlated to assess the relationship between them at each time of measure. As table 6.2.13. shows, both self behaviour blame and self character blame were, as well as being positively related to each other also related positively to other blame and circumstances both at discharge and 2 months follow up and also to

biology but only at discharge. The only other significant relationship found at discharge and 2 months was between chance and the category God. At 6 months there were no significant relationships between the categories. Finally, at 12 months the only significantly related categories were characterological self blame and other blame (r=.32**, p<.001).

Table 6.2.13. Correlations between causal attribution checklist categories within each assessment time. (N=91, 2-tailed significance *=.01, **=.001)

	At Discharge							At 2 mth						
	1	2	3	4	5	6	7	1	2	3	4	5	6	7
1 Beh. self blame	-							-						
2 Ch. self blame	*.49***	-						*.39***	-					
3 Other blame	*.31**	*.39***	-					*.25**	*.42***	-				
4 Circumstances	*.38***	.23	-.05	-				*.40**	*.24**	ns	-			
5 Biology	*.28**	.08	.04	.16	-			.15	.10	-.05	-.03	-		
6 Chance	.05	-.02	-.07	.08		-		-.15	.00	-.09	.11	.02	-	
7 God	-.00	.00	.17	-.12	-.03	*.24**	-	.01	.12	.06	.06	-.02	*.40***	-

6.2.6. Do causal attributions at one time predict causal attributions at subsequent times: consistency and change?

In order to examine the consistency in checklist causal attribution categories over the 4 times of measure the categories were correlated. The results are displayed in tables 6.2.14. to 6.2.19. which shows that the categories were considerably related over the 4 times of measure indicating a consistency in causal attributions. The stability shown in significant relationships is high for most categories except for chance and God. Attributing to chance at discharge was not significantly related to attributing to chance at later follow up. Chance at 2 months although significantly related to attributing to chance at 6 months, was not related to chance at 12 months. There also appeared to be low stability in attributing to God, with the category God at discharge not significantly related to God at 6 and 12 months follow up.

This analysis also assessed whether one form of causal attributions at one time predicted another at subsequent times. These results are also displayed in tables 6.2.14. to 6.2.19. Significant findings showed that ***blaming one's own behaviour*** at discharge was related to characterological self blame and circumstances at 2 months. Those who ***blamed their own character*** at discharge were likely to blame their own behaviour at 2 months and other people at 6 months. Also blaming one's

character at 2 months was predictive of blaming others at 12 months. ***Other blame*** at discharge was associated with both behavioural self - and characterological self blame at 2 months. Although there was consistency in other blame over time, these results seemed to point towards change as well, so that while others were blamed at discharge patients were blaming themselves at 2 months. Attributing to circumstances was not predictive of any other type of attribution at subsequent times. Thinking that there were ***biological causes*** for the MI at discharge was predictive of behavioural self blame at 2 months and those who thought biology was the cause at 2 months post MI were less likely to attribute to circumstances at 6 months. Finally, attributing to ***chance*** and ***God*** seemed to be predictive of one another at most times.

Table 6.2.14. Correlations between causal attribution categories at discharge and 2 mth. (N=91, 2-tailed significance: *-.01, **-.001)

Discharge attributions	2 mth attributions						
	1	*2*	*3*	*4*	*5*	*6*	*7*
1.Beh. self blame	*.66***	*.29**	.10	*.29**	.09	-.13	-.08
2.Ch.self blame	*.37***	*.49***	.25	.17	-.01	-.13	.06
3.Other blame	*.32**	*.31**	*.50***	.07	.08	-.03	.16
4.Circumstances	.24	.19	.06	*.61***	-.06	-.00	-.02
5.Biology	*.29**	.07	-.14	.08	*.61***	.00	-.07
6.Chance	-.12	-.07	-.17	-.07	-.06	.16	.00
7.God	-.02	.08	-.07	-.05	-.05	*.27**	*.35***

Table 6.2.15. Correlations between causal attribution categories at discharge and 6 mth. (N=91, 2-tailed significance: *-.01, **-.001)

Discharge attributions	6 mth attributions						
	1	*2*	*3*	*4*	*5*	*6*	*7*
1.Beh. self blame	*.47***	.05	.20	.00	-.00	-.13	-.08
2.Ch. self blame	.21	*.37***	*.26**	-.08	-.01	-.04	.18
3.Other blame	.05	.20	*.44***	-.16	.18	.05	.08
4.Circumstances	.06	.23	.05	*.41***	-.11	-.13	-.08
5.Biology	.22	.08	-.00	-.25	*.55***	.00	-.13
6.Chance	-.02	-.02	-.04	.09	-.00	.22	.03
7.God	-.10	.10	.03	-.08	-.01	.17	.21

Table 6.2.16. Correlations between causal attribution categories at discharge and 12 mth. (N=91, 2tailed significance: *-.01, **-.001)

Discharge attributions	12 mth attributions						
	1	*2*	*3*	*4*	*5*	*6*	*7*
1.Beh. self blame	*.44***	.20	.12	.08	.05	.07	-.24
2.Ch. self blame	.10	*.41***	.22	.04	-.03	-.00	-.04
3.Other blame	.03	.20	*.39***	-.20	.07	-.02	.06
4.Circumstances	.13	-.08	.00	*.46***	-.10	-.00	-.15
5.Biology	.21	.11	-.00	-.13	*.47***	.10	-.07
6.Chance	.15	.08	-.03	-.05	-.08	.06	.13
7.God	-.03	.15	-.14	-.14	-.09	.06	.06

Table 6.2.17. Correlations between causal attribution categories at 2mth and 6 mth. (N=91, 2-tailed significance: *-.01, **-.001)

2mth attributions	6 mth attributions						
	1	*2*	*3*	*4*	*5*	*6*	*7*
1.Beh. self blame	*.50***	.11	.19	-.01	.09	-.13	-.13
2.Ch. self blame	.18	*.36***	.20	-.08	-.10	-.02	-.01
3.Other blame	-.02	.23	*.39***	-.06	-.09	-.06	-.10
4.Circumstances	.09	.23	.02	*.32***	-.09	-.08	-.15
5.Biology	.12	.06	-.12	*-.31**	*.59***	-.00	-.05
6.Chance	-.11	-.00	-.11	.01	-.00	*.31**	*.28**
7.God	-.05	-.00	.10	-.07	-.09	.08	*.49***

Table 6.2.18. Correlations between causal attribution categories at 2mth and 12 mth. (N=91, 2-tailed significance: *-.01, **-.001)

2mth attributions	12 mth attributions						
	1	*2*	*3*	*4*	*5*	*6*	*7*
1.Beh.self blame	*.47***	-.13	.24	.10	.11	-.13	-.21
2.Ch. self blame	.13	*.42***	*.28**	.00	-.04	-.16	-.13
3.Other blame	-.04	.22	*.46***	.09	-.04	-.15	-.11
4.Circumstances	.14	.00	.08	*.42***	-.02	-.05	-.07
5.Biology	.09	.12	.00	-.25	*.52***	.00	-.07
6.Chance	-.07	.02	-.00	-.14	-.05	.20	*.31**
7.God	-.11	-.02	-.06	-.14	-.01	.26	*.26**

Table 6.2.19. Correlations between causal attribution categories at 6mth and 12mth. (N=91, 2-tailed significance: *-.01, **-.001)

6mth attributions	12 mth attributions						
	1	*2*	*3*	*4*	*5*	*6*	*7*
1.Beh. self blame	*.44***	.05	-.10	.05	.23	.02	-.15
2.Ch. self blame	.02	*.39***	.16	.15	.04	-.03	-.01
3.Other blame	.05	.24	*.43***	-.00	.02	-.01	-.09
4.Circumstances	.05	-.23	-.12	*.62***	-.17	-.11	-.05
5.Biology	.10	.09	.07	-.16	*.68***	.10	-.07
6.Chance	-.00	-.09	-.11	-.12	-.05	*.33***	.41**
7.God	-.22	-.06	.00	-.16	.05	*.44***	*.44***

6.2.7. Most important attributions.

The patients were also asked to rank the checklist attributions they had made in order of importance. Table 6.2.20. displays their ranking order at all four measurement points. At discharge ***smoking*** was ranked by 28.2% of patients as the most important cause, followed by ***worry*** and ***stress***, this appeared to be similar at 2 months post MI, but at 6 months and 12 months stress took the place of smoking and was ranked as the most important cause by 28.3% and 29.3%, followed by fatty foods. Furthermore, smoking did not appear among the three most important causes at 12 months post MI.

Table 6.2.20. Patients ranking of causal attributions by importance at discharge, 2 mth, 6 mth and 12 mth post MI.

Importance	Discharge	2 mth post MI	6 mth post MI	12 mth post MI
First	smoking (28.2%)*	stress & smoking (both 25%)	stress (28.3%)	stress (29.3%)
Second	worry (15,2%)	worry (15.2%)	fatty foods (14.1%)	fatty foods (16.3%)
Third	stress (6.5%)	smoking (9.8%)	smoking (9.8%)	stress (13.0%)

*** The highest % of patients making the ranking.**

6.2.8. Causal chain.

The last question on the causal attribution measure asked the patients whether they thought one cause might have caused another. This was carried out to examine if the patients would see a connection between the causes they had identified. Table 6.2.21. shows that over 30% of patients at all four measurement points did recognise a specific connection between different causes, for example that eating fatty foods caused high levels of cholesterol. Between 32% and 42% did say that the causes were combined or had all gone together to cause the illness but did not say that they were connected. Further 9% to 22% said the causes they had mentioned were not connected.

Table 6.2.21. Do patients see a connection between different causes when asked: *"Do you think these things have gone together to cause your illness or do you think one has led to another, that one cause may have caused another?"*

Causal chain	Discharge	2 mth	6 mth	12 mth
See a specific connection	35.9%	31.5%	35.9%	38.0%
Combination/all gone together	37.0%	35.9%	32.6%	42.4%
No, no connection	9.8%	22.8%	16.3%	14.1%
Don't know	7.6%	3.3%	9.8%	1.1%
Not applicable*	9.7%	6.5%	5.4%	4.4%

*** Not enough causes mentioned to ask the question.**

6.2.9. Summary of univariate causal attribution results.

When examining the spontaneous attributions the results did not support the prediction that the majority of patients would make a spontaneous attribution when asked an open question about their illness. Wondering about the causes for their illness did not seem to be the first thing that came to most patients' minds. Nevertheless, a fairly large number of patients did either refer to a cause or wondered why it had happened.

The results did however show that the majority of patients made a provoked attribution. Over 80% of patients at all 4 measurements did make an attribution when asked what they thought had caused their MI. This might indicate that most patients had engaged in a causal search and had some form of explanation ready when asked. Previous research in this field has revealed similar results, where majority of individuals with life - threatening illness or injury have been found to make and report attributions about the origin of their condition (Taylor et al., 1984; Janoff-Bulman & Wortman, 1977; Schulz & Decker, 1985; Affleck et al. 1987).

There was not a significant difference in the number of patients making provoked attributions at follow up but fewer patients made checklist attributions. The checklist has as many as 34 items to choose from and this could simply mean that the patients had narrowed down the possible causes they attributed or that they were less motivated to search for a cause as time passed. The fact that fewer patients made spontaneous attributions at follow up could mean, as attribution theory suggests (Heider, 1958; Kelley, 1967) that searching for a cause became less important later on than it was earlier on in the adjustment process.

The kind of attributions made by most patients were very similar for all 3 types of measure. ***Stress, smoking, hereditary factors, eating fatty foods*** and ***work*** items were among the top 10 causes mentioned spontaneously, provoked and checklist chosen.

These results could indicate that these patients have knowledge of what are thought to be the main causes for an MI. They could also support, as attribution theory suggests that patients are more likely to attribute to factors they have some control over (Heider, 1958). Attributing the illness

to factors such as smoking and eating fatty foods, gives patients some sense of control, i.e. they could have the power to change their own behaviour which makes ***them*** in control rather than the illness.

When assessing the relationships between the attribution categories both within each time and over time, the results showed that a number of different categories were related. For example, both at discharge and at 2 months follow up when the categories were examined within each time, there were significant relationships between self behaviour blame, self character blame, other blame, biology and circumstances. These relationships did however not emerge at subsequent times, perhaps patients were more likely to stick to one form of causal explanation as time passed.

How the causal attributions were related over time was also examined. The results found that consistency appeared to be high, attributing to a category at one time was in most cases significantly related to attributing to that same category at subsequent times. Changes were however also found, including for example, blaming your own behaviour at discharge being predictive of characterological self blame and attributing to circumstances at 2 months and other blame at discharge being associated with both behavioural self blame - and characterological self blame at 2 months.

Finally, majority of patients were unable to identify a connection between the items they had mentioned as a cause for their illness. However, if the results to that last question are analysed together, over 70% of patients said that the causes were either connected or combined.

6.3. Univariate distress results.

This includes one short section on how distressed, i.e. anxious and depressed, (measured by the HAD), the patients were at each assessment time and how and if that changed over time.

6.3.1. How anxious and depressed were the patients?

The levels of anxiety, depression and overall distress is displayed in table 6.3.1. The findings showed that the means for these patients were within the *non-disordered* range (a score from 0-7) for both anxiety and depression and overall distress at all assessment times and no significant differences were found between times.

Table 6.3.1. Means, std Dev. and F values for anxiety, depression and distress at each assessment time.

	Discharge		2 mth		6 mth		12 mth			
	Mean	*Std. Dev*	*Mean*	*Std. Dev*	*Mean*	*Std. Dev*	*Mean*	*Std. Dev*	*F (DF=3)*	*p**
Anxiety	5.40	4.44	5.89	5.35	4.98	4.82	4.87	4.96	.86	ns
Depression	4.39	3.30	4.15	3.90	3.56	3.69	3.94	4.07	.79	ns
Distress	9.80	7.09	10.03	8.92	8.54	8.17	8.87	8.66	.51	ns

***Significance levels for F values across repeated measurements. N=91.**

CHAPTER 7.

Bivariate and Multivariate Results.

Bivariate Results.

7.1. Is there a sex or age difference in how patients cope, what kind of attributions they make and how distressed they are?

As the above title implies, this section assessed whether male and female patients used different coping strategies, if they made different kinds of attributions and whether they experienced different levels of distress (sub-section 7.1.1.). This was also examined for age (sub-section 7.1.2.).

7.1.1. Sex differences in coping, causal attributions and distress.

Analysis in the form of t-test, found only one significant difference when assessing the difference between males and females use of ***attention*** and ***avoidant*** coping. This difference was found at discharge in ***attention*** coping ($t=2.28$, $p<.025$) male patients were more likely to use attention coping at discharge than females. No other significant results were found.

Mann-Whitney tests were used to examine sex difference in causal attributions (checklist categories were used in this analysis). The findings showed a significant sex difference in the following causal categories: in attributing to ***characterological self blame*** both at 2 months ($z=-2.33$, $p<.01$) and at 12 months ($z=-2.77$, p.005), attributing to ***biology*** at 2 months ($z=-2.45$, $p<.01$), ***God*** at discharge ($z=-2.35$, $p<.01$), in seeing ***circumstances*** as a cause at all times apart from at 2 months (discharge: $z=-2.08$, $p<.03$, 6mth: $z=-3.45$, $p<.001$, 12mth: $z=-2.10$, $p<.03$) and finally in ***blaming others*** at both discharge ($z=-2.97$, $p<.001$) and at 2 months post MI ($z=-2.06$, $p<.03$). Female patients were more likely to attribute to all the above categories apart from circumstances, male patients showed a preference for that category.

T-tests were used to examine whether men and women patients differed on anxiety, depression and overall distress levels. No significant results were found, indicating that men and women were equally anxious, depressed and distressed on all occasions.

7.1.2. Age differences in coping, causal attributions and distress.

Examination of age differences were assessed by correlating age with coping, attributions and distress variables. The first of these analysis showed that there were no significant relationships between attention or avoidant coping and age, this was true at all assessment times. What kind of coping patients used did not seem to be related to how old they were.

The same result was found when assessing age differences in anxiety, depression and overall distress levels. How old patients were did not seem to be associated with their levels of distress, this same result was found at all times of measurement.

What kind of causal attributions patients made did, on the other hand appear to have something to do with age, a few significant relationships emerged. For this analysis, like for sex, the checklist attribution categories were used and the findings showed that younger patients were more likely to ***blame their own behaviour*** for the MI at all times apart from at 2 months(discharge: $r=-.32$, $p<.01$, 6mth: $=-.27$, $p<.01$ and at 12mth: $r=-.39$, $p<.01$). Although the relationship between younger age and self-behaviour blame was not significant at 2 months it showed a trend towards significance ($r=-.26$ ns). Younger patients were also more likely to attribute the MI to ***circumstances*** at discharge ($r=-.32$, $p<.01$), but not at other assessment times. Finally, older patients were more likely to attribute to ***God*** at 12 months post MI ($r=.30$, $p<.01$).

7.1.3. Summary of sex and age differences in coping, causal attributions and distress.

Male and female patients seemed to use similar coping strategies at all assessment times. Only one significant difference was found, where males

showed a higher use of attention coping at discharge than females did. For causal attributions the difference between the sexes was more prominent. These results showed that more ***women*** were likely to ***blame their own character*** than men, more women were also likely to attribute to ***biology***, ***God*** and ***other people***. More ***men*** on the other hand, were inclined to attribute their MI to ***circumstances***. No sex differences were found in levels of distress.

How old patients were did not seem to be related to what form of coping they used or how distressed they were. Patients age did however, to some extend seem to be associated with what kind of attributions they made. Younger patients were more likely to ***blame their own behaviour*** for the MI and this was true at all assessment times. They were also more likely to attribute to ***circumstances*** but only at discharge. Finally, at 12 months older patients were more likely to attribute the MI to ***God***.

7.2. Relationship between causal attributions and coping strategies.

This section examines the relationship between causal attributions and coping strategies with the aim to test the prediction, based on Leventhal's self regulation model (see chapter 2), that ***causal attributions would predict how patients coped.*** This section is divided into 4 sub-sections:

Sub-section *7.2.1. examines relationships between causal attributions and coping strategies within each assessment time, i.e., concurrent relationships.*

Sub-section *7.2.2. asks whether causal attributions at one time "predict" coping at subsequent times.*

Sub-section *7.2.3. is concerned with reversed "causality", i.e., it asks whether coping at one time "predicts" causal attributions at subsequent times.*

Sub-section *7.2.4. presents a summary of the relationships found between causal attributions and coping strategies.*

7.2.1. Are causal attributions and coping strategies related?

The first part of examining the relationship between causal attributions and coping strategies consisted of correlating all causal attribution checklist categories with attention and avoidant coping as well as with each individual coping strategy. This was first carried out to examine concurrent relationships. Bonferroni test was used to correct significance levels, providing a $p < .0033$, trends towards significance are however also reported.

It was evident from these analysis that causal attributions and coping strategies appeared to be related. This included ***behavioural self blame*** ($r=.25$, $p<.01$) and ***other blame*** ($r=.28$, $p<.01$) at discharge being related to ***avoidant coping***. ***Characterological self blame*** ($r=.28$, $p<.01$) at 2 months was also related to ***avoidant coping*** at that same time. All other relationships between causal attributions and attention and avoidant coping were non-significant ($r < .16$ in all cases).

As mentioned above relationships between causal attributions and individual coping strategies were also assessed, table 7.2.1. displays significant findings and trends towards significant from this analysis. As can be seen there, attributing the MI at 2 months to ***behavioural self blame*** was significantly related to coping by using ***mental disengagement***.

Attributing to ***God*** at discharge showed a trend towards being related to ***religious coping*** at that same time.

Although ***characterological self blame*** was not significantly related to any coping strategy at discharge it did show a number of significant relationships with coping at 2 months follow up. Among these were positive relationships with ***mental disengagement, behavioural disengagement,*** and ***focus on and venting of emotions.*** All these ways of coping seemed to be positively related to blaming ones own character for the MI but coping by ***acceptance*** was negatively related to characterological self blame, indicating that those patients who blamed their own character for the illness were less likely to cope by acceptance. At 12 months post MI characterological self blame was still positively related to ***mental disengagement***.

Other concurrent relationships between causal attributions and coping strategies were for example, attributing to ***circumstances*** at discharge showing a trend towards association with coping by ***positive reframing*** at that time and a significant relationship with ***behavioural disengagement*** at 2 months. Attributing to ***other blame*** at discharge was positively related to coping by ***focus on and venting of emotions.*** Finally, attributing to ***chance*** at 12 months post MI showed a positive trend towards association with coping by turning to ***religion***.

Table 7.2.1. Concurrent correlations between causal attributions and coping strategies.

Attributions	Correlations	Coping strategies
	Discharge	
God	.26 trend (p<.01)	Religion
Circumstances	.25 trend (p<.01)	Positive reframing
Other blame	.31*	Focus on and venting of emotions
	2 months	
Behaviour self blame	.32*	Mental disengagement
Character self blame	.33*	" " "
" " "	.26 trend (p<.01)	Behavioural disengagement
" " "	-.29*	Acceptance
" " "	.26 trend (p<.01)	Focus on and venting of emotions
Circumstances	.29*	Behavioural disengagement
	12 months	
Character self blame	.27*	Mental disengagement
Chance	.26 trend (p<.01)	Religion

2 - tailed significance (Bonferroni corrected * p < .0033)

7.2.2. Do causal attributions predict coping?

The relationships between causal attributions and coping strategies previously reported were all concurrent relationships. Another way of gaining a better understanding of whether causal attributions influence coping is to use causal attributions at one time to predict coping strategies at a another, i.e. to test prospective predictions from the one to the other. Like before this was examined for attention and avoidant coping as well as individual coping strategies.

The reported correlations are partial correlations which allow a test between two variables while holding another constant, which in this case is the same variable (at previous time) as is being predicted. This was carried out in order to see whether the relationship between causal

attributions at one time and coping at subsequent times would be affected by coping at previous times. Considering the number of comparisons made in these analysis a Bonferroni test for correction of significance levels should have been applied here. However, as the method of partial correlations was already being used applying a Bonferroni test as well would have resulted in a too stringent test. Results from these analysis therefore report and discuss significant partial correlation findings but the Bonferroni corrected significance level is also reported in each table. Tables 7.2.2. and 7.2.3. display all significant results from these findings with zero order correlations included in brackets.

The only causal attribution which successfully significantly predicted ***avoidant coping*** was ***characterological self blame***. Blaming one's own character at one time was predictive of using avoidant coping at subsequent times (see tables 7.2.2. & 7.2.3.). There was only one exception from this rule, i.e. characterological self blame at 2 months did not significantly predict avoidant coping at 12 months, the correlation was however not very low (r=.22ns) which might suggest a trend towards association. No causal attributions significantly predicted attention coping and all correlations were low (r<.16 in all cases).

When looking at individual coping strategies the first task was to examine the relationship between causal attributions made at discharge and coping strategies at 2 and 12 months post MI (see table 7.2.2.).

Attributing to ***behavioural self blame*** at discharge was not related to any coping strategy 2 months after the MI however, those patients who blamed their own behaviour at discharge were less likely to use coping by ***religion*** at 12 months. Behavioural self blame at 2 months also showed a relationship with ***mental disengagement*** at 12 months but this relationship became non-significant when controlling for mental disengagement at 2 months, behavioural self blame did therefore not account for the change in coping by mental disengagement.

Characterological self blame was significantly related to a number of coping strategies used both at 2 and 12 months. At both times it was negatively related to ***acceptance*** but positively related to ***mental*** and ***behavioural disengagement***. Blaming one's own character at discharge

was also associated with coping by ***denial*** and ***alcohol and drug*** use at 12 months post MI.

Attributing to ***God*** at discharge was positively related to coping by ***religion*** at 2 months follow up. The relationship between attributing to God at discharge and religion at 12 months became non-significant when controlling for religion at 2 months, showing that this association was fully explained by the previous relationship.

Circumstances was the final causal category at discharge related to 2 and 12 months coping. At 2 months it was associated with ***behavioural disengagement*** and at 12 months it related to ***mental disengagement.***

Table 7.2.2. Partial correlations between causal attributions at discharge and coping strategies at 2 mth and 12 mth follow up (zero order correlations).

Attributions	*Coping strategies*	
	2 mth	*12 mth*
Behaviour self blame		Religion -.22*(-.24*)
" " "		Mental disengagement .18ns (.29*)
Character self blame	Acceptance -.23* (-.29*)	Acceptance -.30* (-.35**)
" " "	Mental disengagement .30*(.41**)	Mental disengagement .42* (.52**)
" " "	Behaviour disengagement .34*(.39**)	Behavioural disengagement .40* (.41*)
" " "		Denial .30* (.33**)
" " "		Alcohol/Drugs use .29* (.39*)
God	Religion .25* (.28**)	Religion .16ns (.22*)
Circumstances	Behaviour disengagement .36* (.40**)	Mental disengagement .30* (.40*)
Character self blame	**Avoidant coping .24*(.29*)**	**Avoidant coping .30*(.39**)**

2 - tailed significance: * - .01 ** - .001 (Bonferroni corrected significance = p < .0033)

Causal attributions at 2 months did only show two significant relationships with coping strategies at 12 months. One was ***characterological self blame*** which was positively related to ***mental disengagement***, the other was ***circumstances*** negatively related to coping by ***humour*** (see table 7.2.3.).

At 6 months again only two causal attribution categories showed significant relationships with coping strategies at 12 months but at this time a few more coping strategies were involved (see table 7.2.3.). ***Characterological self blame*** was positively related to ***mental*** and ***behavioural disengagement, focus on and venting of emotions, denial***

and ***alcohol and drug use*** and as before it was negatively related to coping by acceptance. The other causal attribution category at 6 months related to coping at 12 months post MI was attributing to ***chance*** being positively related to ***focus on and venting of emotions.***

Table 7.2.3. Partial correlations between causal attributions at 2mth and 6 mth and coping strategies at 12 mth follow up (zero order correlations).

2 mth attributions	**12 mth coping strategies**
Character self blame	Mental disengagement .24* (.32*)
Circumstances	Humour -.24* (-.23*)
Character self blame	**Avoidant coping(.22ns)**

6 mth attributions#	**12 mth coping strategies#**
Character self blame	Mental disengagement (.27*)
" " "	Acceptance (-.34**)
" " "	Focus on and venting of emotions (.26*)
" " "	Behavioural disengagement (.41**)
" " "	Denial (.28*)
" " "	Alcohol and/or drug use (.27*)
Chance	Focus on and venting of emotions (.27*)
Character self blame	**Avoidant coping (.33**)**

(#no coping data at 6 mth therefore not partial correlations) 2 - tailed significance:* - .01 ** - .001
(Bonferroni corrected significance = p < .0033).

7.2.3. Do coping strategies predict causal attributions?

The next step was to examine the question of reverse "causality", this time using analysis in which coping strategies at one point in time were used to predict subsequent causal attributions.

To start with the broader coping dimensions of attention and avoidant coping were used as predictors of subsequent causal attributions. These results showed three, all positive, significant relationships. One between ***avoidant coping*** at discharge and ***behavioural self blame*** at 12 months (see table 7.2.4.), the second between ***avoidant coping*** at 2 months and ***behavioural self blame*** at 6 months and the third again between ***avoidant coping*** at 2 months but this time with ***characterological self blame*** at 6 months (see table 7.2.5.).

The next part of these analysis examined correlations between individual coping strategies at discharge and causal attribution categories at 2, 6 and 12 months post MI.

As can be seen from table 7.2.4. coping by ***behavioural disengagement*** at discharge was associated with ***characterological self blame*** at 2 months follow up but this relationship became non-significant when controlling for the effects of characterological self blame at discharge. Coping by ***humour*** at discharge showed patients less likely to attribute to ***circumstances*** at 6 months follow up and ***positive reframing*** was related to less attributions to ***chance*** at 6 months.

Table 7.2.4. Partial correlations between coping strategies at discharge and causal attributions at 2 mth, 6 mth and 12 mth follow up (zero order correlations are presented in brackets).

Coping strategies	Causal attributions		
	2 mth	*6 mth*	*12 mth*
Behavioural disengagement	Character self blame .12ns (.27*)		
Humour		Circumstances -.23*(.-25*)	
Positive reframing		Chance -.24*(-.26*)	
Avoidant coping			**Beh. self blame .22*(.27*)**

2 - tailed significance: * - .01 ** - .001 (Bonferroni corrected significance = p < .0071)

Table 7.2.5. shows the relationship between 2 months coping strategies and 6 and 12 months causal attributions. Coping by ***mental disengagement*** was related to attributing to ***biology*** and ***characterological self blame*** at 6 months post MI. There was also a significant relationship between coping by mental disengagement and characterological self blame at 12 months, this relationship did however seem to be explained by characterological self blame at 2 months and did therefore not continue to be significant when this was controlled for. Other coping strategies positively related to characterological self blame at 6 months were ***behavioural disengagement, denial*** and ***alcohol and/or drug use.*** Coping by ***acceptance*** was related to less characterological self blame at 6 months and ***denial*** was associated with attributing to ***other blame*** but ***acceptance*** was related to less ***other blame*** at 6 months.

Table 7.2.5. Partial correlations between coping strategies at 2 mth and causal attributions at 6 and 12 mth follow up(zero order correlations in brackets).

Coping strategies	*Causal attributions*		
	6 mth		*12 mth*
Mental disengagement	Biology	.24*(.22*)	
Mental disengagement	Character self blame	.25* (.32**)	Character self blame .12ns (.24*)
Behaviour disengagement	" " "	.39**(.45**)	
Denial	" " "	.33**(.33*)	
"—"	Other blame	.27** (.31*)	
Alcohol/drug use	Character self blame	.45** (.45**)	
Acceptance	" " "	-.32** (-.36*)	
" "	Other blame	-.32**(-.38**)	
Avoidant coping	**Behaviour self blame**	**.26*(.28**)**	
Avoidant coping	**Character self blame**	**.30*(.39**)**	

2 - tailed significance: * - .01 ** - .001 (Bonferroni corrected significance = p < .0071)

7.2.4. Summary of relationships between causal attributions and coping strategies.

The two main questions to be examined in this analysis were how and if causal attributions were related to coping strategies and whether one predicted the other, in particular whether causal attributions predicted coping strategies.

While first assessing concurrent relationships, findings showed that ***behavioural self blame*** and ***other blame*** were related to ***avoidant coping*** at discharge and ***characterological self blame*** at 2 months was related to ***avoidant coping*** at that same time. No significant relationships were found between causal attributions and attention coping. When examining concurrent relationships between individual coping strategies and causal attributions the findings replicated the above results and showed relationships between individual avoidant strategies, such as ***mental*** - and ***behavioural disengagement, focus on and venting of emotions*** and ***behavioural self blame*** and with ***characterological self blame.*** A few other relationships also emerged, including attributing to ***God*** at discharge being related to ***religious coping***, attributing to ***circumstances***, also at discharge, associated with ***positive reframing*** and at 2 months with ***behavioural disengagement. Other blame*** at discharge was related to ***focus on and venting of emotions*** and finally, attributing to ***chance*** at 12 months was related to ***coping by religion***.

The second question of this analysis was concerned with whether causal attributions at one time predicted how patients coped at subsequent times. The main finding from this analysis showed that ***characterological self blame*** predicted ***avoidant coping*** at all, apart from at 2 months, subsequent assessment times. No causal attributions significantly predicted attention coping. Examination of how causal attributions predicted individual coping strategies showed again that characterological self blame was the best predictor of avoidant coping strategies, such as, ***mental*** - and ***behavioural disengagement, focus on and venting of emotions, denial*** and ***alcohol and/or drug use.*** Other relationships which remained significant after controlling for concurrent relationships, included: Attributing to ***circumstances*** at discharge being related to ***behavioural disengagement*** at 2 months and to ***mental disengagement*** at 12 months. Seeing ***God*** as a cause at discharge was also related to ***coping by religion*** at 2 months. Furthermore, those who attributed to ***circumstances*** at 2 months seemed to be less likely to use coping by ***humour*** at 12 months and attributing to ***chance*** at 6 months was related to coping by ***focus on and or venting of emotions*** at 12 months.

The main findings from using coping strategies as predictors of causal attributions showed that using avoidant coping was predictive of behavioural self blame - and characterological self blame. This included using avoidant coping at discharge being predictive of behavioural self blame at 12 months and avoidant coping at 2 months being predictive of behavioural self blame and characterological self blame at 6 months. When examining individual coping strategies and their relationships with causal attributions those strategies which make up the broader dimensions of avoidant coping were found to be significantly related to causal attributions. On the whole, the strongest relationships were between coping at 2 months and causal attributions at 6 months, where individual avoidant strategies seemed to predict and account for change mostly in characterological self blame and other blame.

Taken together the main results from this analysis seemed to indicate that ***avoidant coping*** and ***characterological self blame*** predicted each other from one time to the next.

7.3. Relationships between causal attributions and distress.

The relationship between causal attributions and distress is examined in this section and based on previous research (see chapter 3) it set out to test the following hypothesis:

Behavioural self blame will be related to and predict less distress.
Characterological self blame will be related to and predict higher distress.
Other blame will be related to and predict higher distress.

This section like the previous one, is divided into 4 sub-sections:

***Sub-section** 7.3.1. examines concurrent relationships between causal attributions and distress.*

***Sub-section** 7.3.2. presents results on whether causal attributions predicted distress.*

***Sub-section** 7.3.3. asks whether distress predicts causal attributions.*

***Sub-section** 7.3.4. gives a summary of relationships between causal attributions and distress.*

7.3.1. Are causal attributions and levels of distress related?

This point of analysis examined concurrent relationships between causal attributions and distress. When the 7 causal attributions categories were correlated with anxiety and depression at discharge, results showed that both ***anxiety*** and ***depression*** were positively related to ***behavioural self blame, characterological self blame*** and ***other blame*** (see table 7.3.1.). This result showed that patients who blamed themselves, either their own behaviour or their character were more anxious and more depressed. This is contradictory to the prediction made above which stated that behavioural self blame would be related to less distress. On the other hand, it does support the other two predictions, characterological self blame and blaming others for the MI were related to higher distress. Characterological self blame was in fact related to higher levels of both anxiety and depression at all assessment times. Other blame although not

related to distress levels at 2 months, was also found to be associated with distress at 6 months. These findings also showed that attributing to ***circumstances*** at discharge was positively related to anxiety and to overall distress.

Table 7.3.1. Correlations between causal attributions and distress: concurrent relationships.

	Discharge			2 mth		
	Anxiety	**Depression**	**Distress**	**Anxiety**	**Depression**	**Distress**
Self beh. blame	.34**	.34**	.38**			
Self ch. blame	.40**	.30**	.39**	.30**	.37**	.35**
Other blame	.23*	.25*	.26*			
Circumstances	.26*	ns	.23*			
	6 mth			**12 mth**		
	Anxiety	**Depression**	**Distress**	**Anxiety**	**Depression**	**Distress**
Self ch. blame	.41**	.35*	.39**	.33**	.38*	.35**
Other blame	.28*	.29*	.29*			

2 tailed significance *-.01 **-.001

7.3.2. Do causal attributions predict levels of distress?

The pattern of associations between causal attributions and distress was also examined by testing prospective predictions the same way this was carried out before between causal attributions and coping strategies, i.e., causal attributions at one time were used to predict levels of distress at subsequent time, while holding constant levels of distress at previous time.

The one causal attribution which was found to be related to anxiety, depression and overall distress was ***characterological self blame.*** Zero order correlations (displayed in brackets in table 7.3.2.) showed that characterological self blame was significantly associated with and predictive of both anxiety and depression, as well as overall distress, at all assessment times. However, these relationships did change considerably when controlling for distress levels at previous times and most relationships became non-significant. This seemed to indicate that distress levels at previous times were intervening variables between characterological self blame at one time and distress levels at subsequent times. In some cases previous distress levels could even be thought of as causal variables relating to subsequent distress which mostly eliminated the effects of characterological self blame on distress. Discharge characterological self blame appeared to show the strongest relationships with subsequent distress levels, its relationships with distress remained

significant, although lower, after controlling for distress levels at discharge.

Table 7.3.2. Partial correlations between causal attribution categories and distress: Causal attributions as "predictors" of distress (zero order correlations in brackets).

Discharge attributions		2 mth	
	Anxiety	Depression	Distress
Character self blame	.18ns(.43**)	.39** (.46**)	.24*(.49**)
		6 mth	
Character self blame	.27*(.49**)	.32*(.48**)	.27*(.50**)
		12 mth	
Character self blame	.21ns(.46**)	.41**(.55**)	.28*(.53**)
2 mth attributions		6 mth	
	Anxiety	Depression	Distress
Character self blame	.14ns(.33**)	-.00ns(.37**)	.07ns(.43**)
		12 mth	
Character self blame	.14ns(.33**)	-.05ns(.32**)	.04ns(.34**)
6 mth attributions		12 mth	
	Anxiety	Depression	Distress
Character self blame	.10ns(.39**)	.11ns(.42**)	.09ns(.43**)

2 tailed significance * -.01 ** - .001

7.3.3. Does distress predict causal attributions.

In this analysis distress at one time was used to "predict" subsequent causal attributions. This analysis showed evidence that distress predicted a number of attribution responses (see table 7.3.3. and 7.3.4.).

When examining the relationship between anxiety and attributions, zero order correlations showed that being ***anxious*** at discharge was significantly related to ***behavioural self blame*** and ***characterological self blame*** both at 2 and 6 months post MI, it was also related to characterological self blame at 12 months follow up. Furthermore, anxiety at discharge was associated with ***other blame*** at 6 months. All of these relationships did however become non significant when partial correlation was used to control for attributions, showing that anxiety at discharge did not account for the change in behavioural self blame , characterological self blame and other blame at subsequent times. Being anxious at 2 months follow up seemed to predict characterological self blame at both 6

and 12 months. The same was true for levels of anxiety at 6 months which predicted characterological self blame at 12 months. When controlling for attributing to characterological self blame at 2 and 6 months, unlike before, anxiety at 2 months and 6 months remained significantly related to characterological self blame at subsequent times, indicating that levels of anxiety accounted for changes in characterological self blame. Finally anxiety at 2 months significantly predicted other blame at 6 months.

Being ***depressed*** at discharge, examining zero order correlations, was related to ***behavioural self blame*** and ***characterological self blame*** at 2 months and to characterological self blame at 12 months but less depression at discharge was related to more attributions to ***chance*** at 12 months post MI. All these relationships, apart from depression at discharge and characterological self blame at 12 months, remained significant after controlling for attributions. Depression at both 2 and 6 months continued to be related to characterological self blame at subsequent times. Although depression at 2 months was found to be related to other blame at 6 months, it did not predict the change in other blame and the relationship became non significant after controlling for other blame at 2 months.

Overall distress at discharge was not found to be predictive of change in behavioural self blame, characterological self blame and other blame at subsequent times. Overall distress at 2 months was on the other hand, found to be related to these causal attributions at subsequent times even after controlling for concurrent associations. This same result was found for overall distress at 6 months which accounted for change in characterological self blame at 12 months.

Table 7.3.3. Partial correlations between causal attribution categories and distress: Distress as a "predictor" of causal attributions (zero order correlations in brackets).

Distress at discharge	Causal attributions 2 mth	
	Beh. self blame	***Ch. self blame***
Anxiety	.11ns(.35**)	.00ns(.31**)
Depression	.22*(.39**)	.27*(.45**)
Distress	.18ns(.40**)	.14ns(.40**)

Distress at discharge	Causal attributions 6 mth		12 months		
	Beh. self blame	***Ch.self blame***	***Other blame***	***Ch.self blame***	***Chance***
Anxiety	.17ns(.36**)	.21ns(.37**)	.09ns(.26*)	.08ns(.31**)	ns
Depression	ns	ns	ns	.17ns(.34**)	-.22*(-.22*)
Distress	.08ns(.30**)	.17ns(.34**)	.08ns(.26*)	.14ns(.49**)	ns

2 tailed significance * - .01 ** - .001 (Bonferroni corrected significance = p < .0071)

Table 7.3.4. Partial correlations between causal attribution categories and distress: Distress as a "predictor" of causal attributions (zero order correlations in brackets).

Distress 2 mth	Causal attributions 6 mth		12 mth
	Ch. self blame	***Other blame***	***Ch.self blame***
Anxiety	.48**(.53**)	.23*(.26*)	.19ns(.30**)
Depression	.51**(.55**)	.19ns(.27*)	.25*(.39**)
Distress	.51**(.56**)	.22*(.27*)	.22*(.35**)

Distress 6 mth	Causal attributions 12 mth
	Ch.self blame
Anxiety	.33**(.45**)
Depression	.21ns(.36**)
Distress	.29**(.42**)

2 tailed significance * - .01 ** - .001 (Bonferroni corrected significance = p < .0071)

7.3.4. Summary of relationships between causal attributions and distress.

The first part of these analyses examined how and if causal attributions were related to levels of distress within each assessment time. The main findings from this analysis showed that ***blaming one's own character*** was related to more anxiety, more depression and higher levels of overall distress at all assessment times. This result therefore supported the

prediction that characterological self blame would be related to higher levels of distress. The prediction that other blame would be related to higher levels of distress was also supported, ***blaming others*** was found to be related to higher levels of anxiety, depression and overall distress both at discharge and at 6 months. Finally, contrary to the prediction made, ***behavioural self blame*** at discharge was related to both anxiety and depression as well as to overall distress.

When testing prospective predictions, using causal attributions at one time to predict distress at subsequent times, the results showed that only ***characterological self blame*** predicted and appeared to account for changes in levels of distress. In fact, blaming your own character at discharge was the only time when characterological self blame was significantly associated with anxiety, depression and overall distress at subsequent times, after controlling for concurrent distress.

This analysis also asked whether distress predicted what form of causal attributions were made. On the whole these findings showed that distress, including both anxiety and depression at 2 months were related to ***characterological self blame*** at both 6 and 12 months and to ***other blame*** at 6 months. Six months distress was also related to characterological self blame at 12 months. These relationships were all significant after controlling for concurrent attributions.

The main overall result from these analysis showed support for the prediction that characterological self blame would be related to and predict higher levels of distress. Behavioural self blame did not on the other hand, show association with or predict lower levels of distress. Finally, the last prediction stating that other blame would be related to and predict higher levels of distress, was partially supported. Other blame both at discharge and at 6 months was related to higher distress levels at these times.

7.4. Relationships between coping strategies and distress.

How the coping strategies related to distress was tested in the analysis that follows. This tested the prediction that ***avoidant coping would be related to and predict higher levels of distress.*** However, taking into account the "time x strategy" hypothesis mentioned in chapter two, (i.e., avoidant coping being related to less distress in the short term but to higher distress in the long term), it was predicted that ***avoidant coping would be related to and predict higher levels of distress at 2, 6 and 12 mth but not at discharge.***

As in previous sections, this section is divided into 4 sub-sections:

Sub-section 7.4.1. *examines how coping strategies and distress levels were related within each assessment time, i.e., concurrent relationships.*

Sub-section 7.4.2. *asks whether coping predicts distress.*

Sub-section 7.4.3. *examines whether distress at one time predicts coping at subsequent times.*

Sub-section 7.4.4. *presents summary of relationships between coping and distress.*

7.4.1. Are coping strategies and levels of distress related?

Correlations between coping strategies and distress showing concurrent relationships are presented in table 7.4.1. While first assessing how attention and avoidant coping related to distress the analysis showed that attention coping was not at any time significantly related to concurrent levels of distress. ***Avoidant coping*** on the other hand, was significantly related to ***higher levels of distress*** at all assessment times. These findings therefore support the prediction made but not the "time x strategy" prediction. Avoidant coping was related to higher distress at discharge as well as at follow up, although the correlation was not as high at discharge.

Like in previous analysis, this part also examined how ***individual coping strategies*** were related to distress. The findings showed that many associations were consistent across repeated measurements. ***Distress*** including both anxiety and depression, was positively related to ***mental*** and ***behavioural disengagement*** at all assessment times. Overall distress was also positively related to ***denial*** at discharge and including both anxiety and depression at 2 and 12 months. Distress was related to ***alcohol and/or drug use*** at all times of measure except for at discharge as it was only related to anxiety at that time. Distress was inversely related to coping by ***acceptance*** at all times of measure, including both anxiety and depression levels at 2 and 12 months.

Other associations differed across the span of the study. These included ***anxiety*** and coping by ***religion*** being inversely related at discharge but not significantly so at other times. ***Depression*** was inversely related to ***planning*** at 2 months but not at other assessment times and only at 12 months follow up was ***positive reframing*** inversely associated with ***overall distress***. Anxiety at 12 months was related to ***seeking of social support for instrumental reasons*** and both anxiety and depression were related to ***suppression of competing activities*** at that time. Distress was positively related to ***focus on and venting of emotions*** both at 2 and 12 months follow up but not at discharge.

Table 7.4.1. Significant correlations between coping strategies and distress at each measurement point: concurrent relationships.

Coping strategies	Discharge			2 mth			12 mth		
	Anx.	**Dep.**	**Distress**	*Anx.*	*Dep.*	*Distress*	*Anx.*	*Dep.*	*Distress*
Attention coping	**.08ns**	**-.04ns**	**.02ns**	*-.06ns*	*-.15ns*	*-.10ns*	*.14ns*	*.14ns*	*.14ns*
Avoidant coping	**.29***	**.21ns**	**.28***	*.54***	*.53***	*.56***	*.50***	*.49***	*.51***
Acceptance			**-.23***	*-.39***	*-.39***	*-.41***	*-.54***	*-.53***	*-.56***
Positive reframing									-.24*
Planning					*-.25**				
Supp. for instr. reasons							*.24**		
Religion	**-.24***		**-.23***						
Supp. competing activities							*.29**	*.25**	*.28**
Mental disengagement	**.27***	**.34****	**.33****	*.34***	*.31***	*.34***	*.46***	*.51***	*.50***
Behavioural disengagement	**.23***	**.27***	**.28***	*.49***	*.50***	*.52***	*.46***	*.34***	*.41***
Focus on and venting of emotions				*.44***	*.44***	*.46***	*.41***	*.42***	*.43***
Denial			**.23***	*.31***	*.26**	*.29**	*.45***	*.34***	*.41***
Alcohol/drug use	**.27***			*.25**	*.32**	*.29**	*.31***	*.31***	*.32***

2 tailed significance * - .01 ** - .001

7.4.2. Do coping strategies predict levels of distress?

This analysis used coping strategies at one assessment point as "predictors" of distress at a later time (results are displayed in table 7.4.2.). Attention coping at discharge and 2 months did not show a significant relationship with either anxiety or depression at any of the subsequent times. The same result occurred for avoidant coping, it did not predict distress levels at 2, 6 or 12 months, and did therefore not support the prediction made at the beginning of this section.

In order to examine this further, the relationship between individual coping strategies and subsequent distress was also assessed. Although a number of significant zero order correlations did emerge between coping strategies and levels of distress, indicating that coping might have some impact on distress, only two of these remained significant after controlling for concurrent distress. One of these was using ***active coping*** at discharge which seemed to account for the change in depression at 12 months, showing less depression at 12 months if active coping had been used at discharge. The other was coping by ***mental disengagement*** at 2 months which was related to the change in anxiety and overall distress at 6 months.

Table 7.4.2. Correlations between coping strategies at one time and distress at subsequent times: coping strategies "predicting" distress. (Zero order correlations are presented in brackets).

Coping Strategies	Distress at 6 mth			Distress at 12mth		
at discharge	*Anx.*	*Dep.*	*Distress*	*Anx.*	*Dep.*	*Distress*
Attention coping	(.10ns)	(-.04ns)	(.04ns)	(-.07ns)	(-.03ns)	(-.05ns)
Avoidant coping	.16ns(.24*)	(.17ns)	(.22ns)	(.07ns)	(.11ns)	(.09ns)
Mental disengagement	.14ns(.24*)	(ns)	.08ns(.22*)	(ns)	(ns)	(ns)
Behavioural disengagement	.16ns(.22**)	.16ns(.27*)	.15ns(.25**)	(ns)	(ns)	(ns)
Active coping	(ns)	(ns)	(ns)	-.24*(-.24*)	(ns)	(ns)
Acceptance	(ns)	(ns)	(ns)	-.15ns(-.27*)		-.15ns(-.28*)

Coping Strategies at 2 mth	Distress at 6 mth		
	Anxiety	*Depression*	*Distress.*
Attention coping	**(.06ns)**	**(-.02ns)**	**(.02ns)**
Avoidant coping	**.19ns(.43**)**	**.11ns(.46**)**	**.15ns(.47**)**
Acceptance	-.16ns(-.37**)	-.14ns(-.37**)	-.14ns(-.38**)
Supp. of competing activities	.19ns(.27*)	(ns)	.16ns(.23*)
Mental disengagement	.31**(.47**)	.16ns(.36**)	.25*(.44**)
Focus/venting of emotions	.06ns(.35**)	.06ns(.34**)	.04ns(.36**)
Denial	.02ns(.22*)	.07ns(.25*)	.02ns(.24*)
Alcohol and/or drug use	(ns)	.12ns(.34**)	.06ns(.27*)
Behavioural disengagement	-.02(.31**)	-.04ns(.39**)	-.06ns(.36**)

Coping Strategies at 2 mth	Distress at 12 mth		
	Anxiety	*Depression*	*Distress*
Attention coping	**(-.09ns)**	**(-.05ns)**	**(-.08ns)**
Avoidant coping	**.19ns(.39**)**	**.16ns(.46**)**	**.17ns(.43**)**
Acceptance	-.10ns(.33**)	-.17ns(.38**)	-.13ns(-.37**)
Mental disengagement	.10ns(.33**)	.20ns(.38**)	.14ns(.37**)
Focus/venting of emotions	.08ns(.36**)	.15ns(.37**)	.09ns(.38**)
Denial	.04ns(.24*)	.07ns(.22*)	.04ns(.24*)
Behavioural disengagement	.03ns(.35**)	.10ns(.45**)	.03ns(.41**)

2 tailed significance * - .01 ** - .001

7.4.3. Does distress predict coping?

As with causal attributions the question of reverse "causality" was also examined between coping strategies and distress, using distress at one point in time as a "predictor" of coping strategies at subsequent times. As before considering the number of comparisons made, Bonferroni corrected significance level is provided. However, as previously mentioned, as this results in a too stringent test, significant partial correlation findings are presented and discussed. These results are shown in tables 7.4.3. and 7.4.4.

Anxiety and depression as well as overall distress did not predict attention coping at subsequent times. Nevertheless, when examining the impact of distress on individual coping strategies, 2 coping strategies grouped into the broader dimension of attention coping, seemed to be predicted by distress, these included ***suppression of competing activities*** and ***seeking of social support for emotional reasons.***

The results were different when it came to avoidant coping, anxiety, depression and overall distress at one time predicted and accounted for change in avoidant coping at all subsequent assessment times. This was also clear when analysing individual coping strategies, levels of distress were associated with and predicted change in those coping strategies which had been grouped as avoidant coping. This included anxiety and depression as well as overall distress being inversely related to ***acceptance*** and positively associated with ***mental*** - and ***behavioural disengagement, denial, focus on and venting of emotions*** and ***alcohol and/or drug use.***

The findings from these analysis could therefore conclude that distress did predict how patients coped.

Table 7.4.3. Correlations between distress at discharge and coping strategies at 2 and 12 months follow up: Distress "predicting" coping strategies. (Zero order correlations in brackets).

2mth coping strategies	Distress at discharge		
	Anxiety	*Depression*	*Distress*
Attention coping	**(.11ns)**	**(.06ns)**	**(.10ns)**
Avoidant coping	**.42**(.40**)**	**.31**(.33**)**	**.38**(.41**)**
Acceptance	-.27*(.34**)	-.25*(-.31**)	-.28**(-.36**)
Supp. of competing activities	.30**(.32**)	.26*(.27*)	.31*(.33**)
Mental disengagement	.35**(.41**)	.26*(.34**)	.34**(.41**)
Focus/venting of emotions	.28**(.34**)	.20ns(,23*)	.27*(,32**)
Behavioural disengagement	.25*(.28*)	.28**(.34**)	.29**(.33**)

12 mth coping strategies	Distress at discharge		
	Anxiety	*Depression*	*Distress*
Attention coping	**(-.05ns)**	**(-.04ns)**	**(-.05ns)**
Avoidant coping	**.22*(.28**)**	**(.15ns)**	**(.24ns)**
Acceptance	-.43**(-.48**)	-.21*(-.27*)	-.37**(-.43**)
Supp. of competing activities	.25*(.27*)	.26*(.26*)	.28**(.29**)
Mental disengagement	.23*(.31**)	.15ns(.26*)	.21*(.32**)
Focus/venting of emotions	.21*(.27*)	(.18ns)	.21ns(.25*)
Denial	.16ns(.22*)	(ns)	(ns)
Behavioural disengagement	.43**(.44**)	.31**(.33**)	.42**(.43**)

2 tailed significance *-.01 **-.001 (Bonferroni corrected significance = p < .0033)

Table 7.4.4. Correlations between distress at 2 and 6 months and coping strategies at 12 months follow up: Distress "predicting" coping strategies. (Zero order correlations in brackets).

12 mth coping strategies	Distress at 2 mth		
	Anxiety	*Depression*	*Distress*
Attention coping	**(-.11ns)**	**(-.11ns)**	**(-.12ns)**
Avoidant coping	**(.35**)**	**(.40**)**	**(.39**)**
Acceptance	-.31**(-.44**)	-.35**(-.47**)	-.34**(-.39**)
Seeking of supp. for emotional reasons	.25*(.24*)	.29**(.28**)	.27**(.26*)
Suppression of competing activities	(.19ns)	.19ns(.22*)	.17ns(.21*)
Mental disengagement	.25*(.34**)	.30**(.37**)	.29**(.37**)
Focus/venting of emotions	.30**(.47**)	.34**(.47**)	.33**(.44**)
Denial	.19ns(.27*)	.24*(.31**)	.22*(.29**)
Behavioural disengagement	.29**(.53**)	.27*(.56**)	.30**(.56**)

12 mth coping strategies	Distress at 6 mth"		
	Anxiety	*Depression*	*Distress*
Attention coping	**(-.10ns)**	**(-.13ns)**	**(-.11ns)**
Avoidant coping	**(.40**)**	**(.39**)**	**(.42**)**
Acceptance	(-.36**)	(-.39**)	(-.39**)
Seeking of supp. for emotional reasons	(.31**)	(.32**)	(.33**)
Mental disengagement	(.36**)	(.36**)	(.38**)
Focus/venting of emotions	(.38**)	(.40**)	(.40**)
Denial	(.33**)	(.25*)	(.31**)
Alcohol and/or drug use	(.27*)	(.29**)	(.29**)
Behavioural disengagement	(.42**)	(.50**)	(.47**)

2 tailed significance * - .01 ** - .001 "No coping data at 6 mth therefore no partial correlations (no concurrent relationships with distress at 6 months).

7.4.4. Summary of relationships between coping strategies and distress.

These findings showed that ***avoidant coping*** was significantly related to ***more anxiety, depression and more overall distress at all assessment times.*** These results did therefore not support the "time x strategy" hypothesis which a number of other studies have shown. The reason for this could however, lie in the time of data collection. The present study first assessed coping more than 2 weeks from the illness onset, while other studies which have shown avoidant coping to be related to lower distress in the short term, have assessed coping within 3 days of illness/event onset. Looking at individual coping strategies and how they were concurrently related to distress showed that avoidant coping strategies, such as mental - and behavioural disengagement, denial and alcohol and drug use were all positively related to both anxiety and depression. Although attention coping defined in its broad term was not found to be significantly related to levels of distress, individual coping strategies which had been grouped as attention coping, showed some relationships with

distress. This included for example, ***planning*** and depression inversely related at 2 months, ***positive reframing*** inversely associated with overall distress, ***seeking of social support for instrumental reasons*** related to anxiety at 12 months follow up and ***suppression of competing activities*** related to both anxiety and depression at 12 months.

The next analysis involved assessing whether coping at one time predicted distress levels at subsequent times. On the whole this did not seem to be the case. Neither avoidant or attention coping predicted anxiety, depression or overall distress. Although a number of relationships did emerge when examining individual coping strategies and their relationship with distress, the majority of these became non existent or at least non significant after controlling for concurrent distress. Two exceptions were however found, one was the use of ***active coping*** at discharge being related to ***less depression*** at 12 months, the other was coping by ***mental disengagement*** at 2 months which was obtained to be related to anxiety and overall distress at 6 months follow up.

The question of reverse "causality" , where distress at one time was used to predict coping at subsequent times, gave different results. In this case distress appeared to be a better predictor of how patients coped than vice versa. This was particularly true for distress and avoidant coping, ***anxiety, depression and overall distress predicted avoidant coping at all subsequent assessment times.*** The more distress patients were experiencing at one time the more likely they were to use avoidant coping at subsequent times even after controlling for concurrent coping.

Overall, this section could therefore conclude that there was a relationship between coping strategies and levels of distress and distress appeared to be a stronger predictor of coping than vice versa.

Multivariate results.

7.5. What are the best predictors of distress, coping and causal attributions?

The aim of the final part of the result section was to use multiple regression analysis to firstly, examine how and whether causal attributions and coping strategies explained and predicted levels of distress over the span of the study (sub-section 7.5.1.). Secondly, to examine what were the best predictors of coping strategies at each assessment time (sub-section 7.5.2.), and finally, to assess the best predictors of causal attributions across the study (sub-section 7.5.3.).

Note: As these analysis were all carried out for exploratory purposes, those variables which were significantly related to the independent variable before the Bonferroni corrections were also included.

7.5.1. How are causal attributions and coping strategies related to levels of distress?

This analysis was concerned with concurrent relationships, where stepwise multiple regression analysis was used to examine which variables, coping strategies or causal attributions, were most useful in explaining levels of distress. This analysis was carried out for all three assessment times, i.e., discharge, 2 months and 12 months, where both causal attributions and coping strategies were measured as well as distress. The independent variables used in each analysis were chosen because they were known to be significantly related to levels of distress, as revealed in previous correlation analysis.

The first of the equations was used to examine how ***characterological self blame, behavioural self blame, other blame*** and ***avoidant coping*** at discharge were related to anxiety, depression and overall distress at that same time. The question to be answered was which one of these independent variables would explain the most of the variance in levels of distress. While first examining anxiety, the results showed that characterological self blame explained 24% of the variance in anxiety (see table 7.5.1.) the other attributions and avoidant coping did not significantly

add anything to that explanation. This result indicated that ***characterological self blame*** had the biggest impact on levels of anxiety, the more patients blamed their own character for the MI the more anxious they were. A very similar result was found for depression and overall distress. Characterological self blame explained 16% of the variance in depression at discharge and other variables did not enter the equation and characterological self blame explained 25% of the variance in overall distress without other variables in the equation. Behavioural self blame was however, close to significance (T=1.76, p<.08) in relation to overall distress, indicating that it had some impact on overall distress levels.

Table 7.5.1. Causal attributions and coping strategies and their relationship with anxiety, depression and overall distress at discharge.

Anxiety
Overall adjusted R square =.24, p<.001

	Beta	T	p
Character self blame	.49	6.01	.001

Depression
Overall adjusted R square = .16, p.000

	Beta	T	p
Character self blame	.41	4.77	.001

Overall distress
Overall adjusted R square =.25, p<.001

	Beta	T	p
Character self blame	.50	6.22	.001

The next regression analysis assessed the relationship between causal attributions, coping strategies and distress levels at 2 months. Like before, independent variables were chosen for the analysis if they had been significantly related to levels of distress. This resulted in a regression equation using ***characterological self blame*** and ***avoidant coping*** as independent variables and anxiety, depression or distress as dependent variables. The results showed that avoidant coping and characterological self blame together explained 30% of the variance in anxiety at 2 months, 32% of the variance in depression and 34% of the variance in overall distress. Avoidant coping had the bigger impact of the two but characterological self blame added to the prediction, showing that using avoidant coping and blaming one's own character for the MI was related to higher anxiety, depression and overall distress (see table 7.5.2.).

Table 7.5.2. Causal attributions and coping strategies and their relationships with anxiety, depression and overall distress at 2 months.

Anxiety
Overall adjusted R square =.30, p<.001

	Beta	T	p
Avoidant coping	.48	5.85	.001
Character self blame	.18	2.30	.02

Depression
Overall adjusted R square = .32, p.001

	Beta	T	p
Avoidant coping	.45	5.58	.001
Character self blame	.24	3.04	.002

Overall distress
Overall adjusted R square =.34, p<.001

	Beta	T	p
Avoidant coping	.49	6.11	.001
Character self blame	.22	2.79	.006

The final regression analysis using both causal attributions and coping strategies to explain the concurrent variance in levels of distress included 12 months follow up data. Here as before, independent variables were those who had been significantly related to the dependent variable. This included ***avoidant coping*** and ***characterological self blame*** as the independent variables and anxiety, depression or overall distress as the dependent ones. Like at 2 months the results from this analysis showed that avoidant coping and characterological self blame at 12 months were both involved in explaining the variance in levels of distress at 12 months. As at 2 months avoidant coping had a bigger impact on distress levels than characterological self blame but as previously both were positive, indicating that using avoidant coping and blaming ones own character explained a significant amount of the variance in anxiety, depression and overall distress. Coping by using avoidant strategies and attributing the MI to characterological self blame at 12 months explained 25% of the variance in anxiety, 30% of the variance in depression and 30% in the variance of overall distress.

Table 7.5.3. Causal attributions and coping strategies and their relationships with anxiety, depression and overall distress at 12 months.

Anxiety			
Overall adjusted R square =.25, p<.001			
	Beta	T	p
Avoidant coping	.39	4.63	.001
Character self blame	.25	3.04	.002
Depression			
Overall adjusted R square = .30, p.001			
	Beta	T	p
Avoidant coping	.36	4.56	.001
Character self blame	.35	4.32	.001
Overall distress			
Overall adjusted R square =.30, p<.001			
	Beta	T	p
Avoidant coping	.39	4.85	.001
Character self blame	.31	3.80	.002

Concurrent relationships between causal attributions and levels of distress were also examined at the 6 months follow up point. At this time patients coping strategies were not assessed and were therefore not included in these analysis. Two kinds of attributions at 6 months, characterological self blame and other blame, were significantly related to anxiety, depression and overall distress, these were therefore used as independent variables in the regression analysis. The aim of this analysis was to investigate which one of these two attributions better explained the variance in levels of distress, findings are displayed in table 7.5.4. The results showed that characterological self blame had a greater impact than other blame on anxiety and depression as well as on overall distress. Other blame did not enter the equation, showing that it did not add anything to the explanation of distress levels, it did however, come close to significance with overall distress (T=1.67, p<.09). Characterological self blame at 6 months explained 23% of the variance in anxiety, 21% of depression and 25% of overall distress.

Table 7.5.4. Causal attributions and their relationships with anxiety, depression and overall distress at 6 months.

Anxiety			
Overall adjusted R square =.23, p<.001			
	Beta	T	p
Character self blame	.49	5.99	.001
Depression			
Overall adjusted R square = .20, p.001			
	Beta	T	p
Character self blame	.46	5.56	.001
Overall distress			
Overall adjusted R square =.24, p<.001			
	Beta	T	p
Character self blame	.50	6.18	.001

7.5.2. Summary of concurrent relationships between causal attributions, coping strategies and levels of distress.

The findings from these stepwise multiple regression analysis showed that at discharge characterological self blame was the only significant variable that explained levels of distress at that time. At 2 and 12 months results showed that avoidant coping was most highly related to distress levels, characterological self blame did however, remain as a significant factor in explaining distress at those times also. Furthermore, characterological self blame at 6 months had a bigger impact on distress than other blame at that time.

On the whole, these results showed that in this population of patients with MI, blaming one's own character for the illness and/or using avoidant coping explained between 20 and 34% of the variance in their concurrent levels of anxiety, depression and overall distress.

7.5.3. What are the best predictors of distress: causal attributions or coping strategies?

In order to examine this question, lets first refer back to the bivariate results between coping strategies and distress on the one hand, and between causal attributions and distress levels on the other. These results showed that the broader dimensions of attention and avoidant coping were

not found to be related to distress at subsequent times. Only two relationships were found between coping at one time and distress levels at subsequent times. One was between ***active coping*** at discharge and depression at 12 months. The other was between coping by ***mental disengagement*** at 2 months and anxiety and overall distress at 6 months. The only causal attribution found to be related to anxiety, depression and overall distress at subsequent times, was ***characterological self blame*** at discharge. Characterological self blame at other times was not significantly associated with distress levels at subsequent times after controlling for concurrent distress.

Multiple regression analysis are statistical techniques set out to examine the relationship between two or more independent variables and one dependent variable. Furthermore, the general consideration for choosing independent variables for a regression analysis is that they are significantly correlated with the dependent variable (Tabachnick & Fidell, 1989). Considering that few significant relationships were found between causal attributions and distress and coping strategies and distress, and based on the above criterion, it was considered unnecessary to carry out a multiple regression analysis where causal attributions and coping strategies were used as predictors of subsequent distress levels. This sub-section will therefore conclude by referring to bivariate results where the main finding was, that ***characterological self blame*** at discharge and no other attribution, was associated with distress at all subsequent times. Furthermore, how patients coped had little impact on their subsequent levels of distress, showing only two individual coping strategies related to subsequent distress, i.e., ***active coping*** at discharge and depression at 12 months and ***mental disengagement*** at 2 months and anxiety plus overall distress at 6 months.

7.5.4. What is the best predictor of how patients cope: distress or causal attributions?

In this sub-section of multivariate analysis, stepwise multiple regression was used to examine what were the best predictors of coping. As the aim of this analysis was a prediction equation, stepwise regression was used in order to evaluate which subset of either distress or causal attributions was most useful in predicting coping strategies. In each regression analysis

those variables which were significantly related to coping at the bivariate level were used as the independent variables.

First of these analysis assessed whether ***characterological self blame*** and ***overall distress at discharge predicted avoidant coping at 2 months after accounting for avoidant coping at discharge.*** In order to examine this, avoidant coping at discharge was first entered into the equation, this showed that avoidant coping at discharge correlated with avoidant coping at 2 months explaining 11% of the variance in 2 months avoidant coping. This analysis also showed that both characterological self blame and overall distress would add to the prediction and explain more of the variance in avoidant coping at 2 months if they were entered next (self ch. blame = T =2.38, p<.01, distress = T=.3.36, p<.001). Following this, characterological self blame and overall distress were entered using the stepwise procedure. The results from this analysis showed that overall distress had a greater impact on 2 months avoidant coping than characterological self blame and the overall explained variance of avoidant coping at 2 months was raised to 20% (see table 7.5.5.)

Table 7.5.5. Do characterological self blame and overall distress at discharge predict avoidant coping at 2 months after controlling for avoidant coping at discharge?

	Avoidant coping at 2 months		
Discharge	Beta	T	p
Avoidant coping	.34	3.66	.001 > (Overall adjusted R square =.11, p<.001)
Overall distress	.31	3.36	.001

Overall adjusted R square=.20, p<.001 (after adding overall distress)

The next of these analysis assessed whether ***characterological self blame*** and ***anxiety at discharge predicted avoidant coping at 12 months after accounting for avoidant coping at discharge.*** The same procedure was used as in previous analysis and in this case avoidant coping at discharge predicted 4% of the variance in avoidant coping at 12 months. Both characterological self blame and anxiety were found to add to the prediction if they had been entered next (self ch. blame= T =.5.55, p<.001, anxiety = T =.2.25, p<.02). After entering characterological self blame and anxiety the overall prediction of 12 months avoidant coping was raised

to 27%. Stepwise regression showed that characterological self blame was enough to account for this increase and anxiety did not enter the stepwise equation (see table 7.5.6.).

Table 7.5.6. Do characterological self blame and anxiety at discharge predict avoidant coping at 12 months after controlling for avoidant coping at discharge?

	Avoidant coping at 12 months		
Discharge	Beta	T	p
Avoidant coping	.22	2.23	.02 > (Overall adjusted R square =.04, p<.02)
Character self blame	.51	5.55	.001

Overall adjusted R square=.27, p<.001 (after adding character self blame)

Although levels of distress at 2 months were significantly related, at the bivariate level, to avoidant coping at 12 months, causal attributions at 2 months were not significantly correlated with either attention or avoidant coping at 12 months. It was therefore unnecessary to perform a multiple regression analysis between these two time points. Thus, the last of the prediction equation analysis for coping included assessing whether ***characterological self blame*** and ***overall distress at 6 months predicted avoidant coping at 12 months.*** As coping data at 6 months was not included in the thesis, this analysis did not need to account for concurrent avoidant coping. Stepwise regression showed that characterological self blame and overall distress at 6 months together predicted 24% of the variance in avoidant coping at 12 months. Characterological self blame appeared to have the bigger impact on avoidant coping of the two. These results indicated that attributing to characterological self blame and higher distress levels predicted some of the variance in use of avoidant coping at 12 months.

Table 7.5.7. Do characterological self blame and overall distress at 6 months predict avoidant coping at 12 months?

	Avoidant coping at 12 months		
6 months	Beta	T	p
Character self blame	.33	3.19	.001
Overall distress	.25	2.43	.01

Overall adjusted R square=.24, p<.001

7.5.5. Summary of relationships between causal attributions and distress at one time and coping strategies at subsequent times.

The findings from these analysis showed that avoidant coping at discharge was the strongest predictor of avoidant coping at two months. This was however, not true while predicting avoidant coping at 12 months. Characterological self blame at discharge was in this case found to be a stronger predictor than previous avoidant coping. On the whole, both characterological self blame and levels of distress at one time were found to predict a significant amount of the variance in avoidant coping at subsequent times. Characterological self blame appeared to be a stronger predictor than distress at all times, the only exception was at discharge where overall distress showed a stronger impact on avoidant coping at 2 months than characterological self blame did.

The main findings of these analysis would point towards the conclusion that it is not just the use of avoidant coping in the past that predicts the use of avoidant coping in the future, other variables, in this case blaming one's own character for the illness and how distressed one is, have an impact on future coping as well. Furthermore, blaming one's own character for the event is more likely to predict the use of avoidant coping than levels of distress.

7.5.6. What is the best predictor of the kind of attributions patients make: distress or coping strategies?

This analysis was concerned with predictors of causal attributions. As in sub-section 7.5.5. stepwise multiple regression analyses were carried out while accounting for concurrent relationships and like before, independent variables chosen for each equation were those which had been significantly related to the dependent variable at the bivariate level.

The first equation was carried out to assess whether ***levels of anxiety at discharge*** and ***the patients' sex would predict characterological self blame at 2 months, while accounting for characterological self blame at discharge.*** The results showed that characterological self blame at discharge correlated with characterological self blame at 2 months explaining 28% of the variance. These results also indicated that whether

the patient was a male or a female would add to the prediction of characterological self blame if it were to be entered next (T=.2.03, p<.04). After entering sex and anxiety levels at discharge in a stepwise procedure, 30% of the variance in characterological self blame at 2 months was explained (see table 7.5.8.), anxiety did not enter the equation.

Table 7.5.8. Do levels of anxiety at discharge and patient sex predict characterological self blame at 2 months after controlling for characterological self blame at discharge?

	Characterological self blame at 2 months		
Discharge	Beta	T	p
Character self blame	.52	6.22	.001 > (Overall adjusted R square =.28, p<.001)
Sex	.17	2.03	.04

Overall adjusted R square=.30, p<.001 (after adding sex)

The next equation examined whether patients ***age*** and ***their levels of anxiety at discharge predicted behavioural self blame at 2 months after accounting for behavioural self blame at discharge.*** This analysis showed that blaming one's own behaviour at discharge predicted 34% of the variance in behavioural self blame at 2 months, this also showed that age would add to the prediction if entered (T=.-2.31, p<.02). Age and anxiety levels were entered next into a stepwise regression, which showed that age added to the prediction leaving 39% of the variance in behavioural self blame at 2 months explained. Age, being young, had an impact on attributing the MI to behavioural self blame but discharge levels of anxiety did not enter the stepwise equation.

Table 7.5.9. Do levels of anxiety at discharge and patient age predict behavioural self blame at 2 months after controlling for behavioural self blame at discharge?

	Behavioural self blame at 2 months		
Discharge	Beta	T	p
Behavioural self blame	.49	5.88	.001 > (Overall adjusted R square =.34, p<.001)
Age	-.25	-2.89	.004

Overall adjusted R square=.39, p<.001 (after adding age)

Only one variable at discharge was related to behavioural self blame at 12 months, this was avoidant coping and only sex was related to characterological self blame at 12 months. These bivariate results therefore did not call for a multiple regression analysis. The same was true for relationships between coping, distress, sex and age at 2 and 6 months and causal attributions at 12 months, too few bivariate significant relationships were found to carry out a regression analysis, which as mentioned earlier requires more than one independent variable. This leaves only the following two prediction equation for causal attributions:

Firstly, including ***avoidant coping, sex*** and ***anxiety at 2 months predicting characterological self blame at 6 months, after accounting for characterological self blame at 2 months.***

Secondly, using ***avoidant coping, age*** and ***anxiety at 2 months as predictors of behavioural self blame at 6 months, after having accounted for behavioural self blame at 2 months.***

While first assessing the predictors of characterological self blame at 6 months, the results obtained that characterological self blame at 2 months predicted 10% of the variance in characterological self blame at 6 months. Avoidant coping and levels of anxiety were also found to add to this prediction if entered next (avoidant coping, $T=4.91$, $p<.001$, anxiety = $T=5.03$, $p<.001$). Stepwise regression equation showed that levels of anxiety and avoidant coping together added to the prediction so that overall variance explained in characterological self blame at 6 months was 34%. Levels of anxiety had greater impact on 6 months characterological self blame than avoidant coping and sex did not enter the equation (see table 7.5.10.). These results seemed to indicate that although characterological self blame at discharge predicted characterological self blame at 2 months it did not have the strongest impact on blaming ones own character at 6 months, levels of anxiety and the use of avoidant coping together appeared to be better predictors of 6 months characterological self blame.

Table 7.5.10. Do levels of anxiety and avoidant coping at 2 months and patient sex predict characterological self blame at 6 months after controlling for characterological self blame at 2 months?

	Characterological self blame at 6 months		
2 months	Beta	T	p
Character self blame	.33	3.37	.001 > (Overall adjusted R square =.10, p<.001)
Avoidant coping	.29	2.83	.005
Anxiety	.31	3.00	.003

Overall adjusted R square=.34, p<.001 (after adding avoidant coping and anxiety)

The last regression equation presented here examined whether ***avoidant coping, anxiety*** and ***age at 2 months predicted behavioural self blame at 6 months, while having accounted for behavioural self blame at 2 months.*** The findings from these analysis obtained that behavioural self blame at 2 months predicted 28% of the variance in behavioural self blame at 6 months. However, avoidant coping was also found to predict behavioural self blame at 6 months in addition to previous behavioural self blame, leaving the overall predicted variance at 32%. Anxiety and age did not add to that prediction (see table 7.5.11.).

Table 7.5.11. Do levels of anxiety, avoidant coping at 2 months and patient age predict behavioural self blame at 6 months after controlling for behavioural self blame at 2 months?

	Behavioural self blame at 6 months		
2 months	Beta	T	p
Behaviour self blame	.51	5.84	.001 > (Overall adjusted R square =.28, p<.001)
Avoidant coping	.20	2.37	.01

Overall adjusted R square=.32, p<.001 (after adding avoidant coping)

7.5.7. Summary of relationships between coping, distress, age and sex at one time and causal attributions at subsequent times.

The general findings from these analysis showed that the best predictor of characterological self blame at one time was characterological self blame at previous times. The same result was found for behavioural self blame, the best predictor of attributing the MI to one's own behaviour at one time was behavioural self blame at previous times. However, avoidant coping and/or levels of anxiety, sex and age at one time did significantly explain some of the variance in both characterological self blame and behavioural self blame at subsequent times. This included sex adding on to the prediction of characterological self blame at 2 months. Age also

significantly contributed to the prediction of behavioural self blame at 2 months, showing that the younger the patient, the more likely he or she was to attribute to behavioural self blame at 2 months follow up. Using avoidant coping at 2 months was found to significantly explain the variance in both characterological self blame and behavioural self blame at 6 months. Levels of anxiety at 2 months were also found to predict attributing the illness to characterological self blame at 6 months. To conclude, these findings indicate that causal attributions at one time are the strongest predictors of causal attributions at subsequent times. Nevertheless other factors add to this prediction, in particular avoidant coping and levels of anxiety.

In an attempt to present the overall findings from the multivariate results in a visual form, figure 2 below provides a diagram of the results.

This shows that sex explained some of the variance in characterological self blame, which in turn explained both concurrent and subsequent variance in both higher levels of distress and the use of avoidant coping.

Being distressed at one assessment time explained a significant amount of the variance in using avoidant coping at subsequent times and avoidant coping at 2 months was found to explain a significant variance in both blaming one's own character and behaviour at 6 months post MI. Finally, age explained a significant amount of the variance in behavioural self blame.

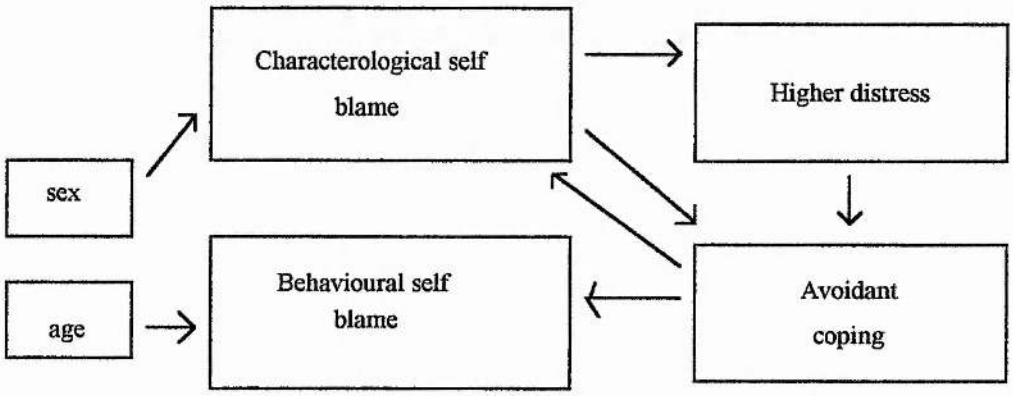


Figure 2. A diagram of the multivariate results (see text above).

7.6. Summary of univariate, bivariate and multivariate results.

This section presents a summary of the main findings of the study. Univariate results are presented first, then bivariate and finally multivariate.

Univariate coping results:

1. The process of coping following a first MI did change over time, with overall coping being most early on after the illness onset. Ten out of 15 coping strategies showed a significant decrease across time.

2. The most commonly reported coping strategy at all 3 assessment times was ***acceptance***, followed by ***restraint coping*** at discharge, ***active coping*** at 2 months and coping by ***religion*** at 12 months.

3. The least reported coping strategies at all assessment times were coping by using ***alcohol and/or drugs*** and ***feelings of withdrawing or giving up (behavioural disengagement).***

4. In a two factor solution, 13 of the COPE's 15 coping strategies grouped together into the two broader dimensions of ***attention*** versus ***avoidant*** coping as defined by Suls and Fletcher (1985). Coping by humour and religion did not load with the other items.

5. Attention coping was used significantly more than avoidant coping at discharge and at 2 months, but no difference was found in reported use of attention versus avoidant coping at 12 months post MI.

6. Reported use of attention coping decreased over time, while the use of avoidant coping increased as time passed.

7. When assessing if the patients reported to cope differently while coping with their illness than when they had to cope with other difficulties in their lives, the results showed that they used attention coping significantly more when coping with other things than when coping with the MI and the reverse was true for avoidant coping.

Univariate causal attribution results:

8. The majority of patients did not made a spontaneous attribution when asked an open question about their illness.

9. Over 80% of patients made a provoked attribution at all 4 assessment times, when asked openly and directly about what they thought had caused their illness.

10. Patients made fewer attributions as time passed.

11. The most commonly mentioned causes for the MI were: ***stress, smoking, hereditary factors, eating fatty foods*** and ***work*** items.

12. Consistency over time in what patients attributed their MI to appeared to be high, attributing to one type was related to attributing to that same type again at a later time. Changes did however, also emerge, for example attributing to behavioural self blame at discharge was associated with characterological self blame at 2 months and seeing circumstances as a cause also at 2 months and other blame at discharge was associated with both characterological self blame and behavioural self blame at 2 months.

13. Majority of patients were unable to identify a connection between the items they had mentioned as a cause for their illness.

Univariate distress results:

14. Patients were within the normal range for anxiety, depression and overall distress at all assessment times.

Bivariate results:

Sex differences in causal attributions, coping strategies and distress levels:

15. Male and female patients used similar coping strategies, only one significant sex difference was found, where men appeared to use more attention coping at discharge than women did.

16. Women were more likely to blame their own character for the MI than men, women were also more likely to attribute to biology, God and other people.

17. Men were more likely to attribute the MI to circumstances than women.

18. No sex differences were found in levels of distress.

Age differences in causal attributions, coping strategies and distress levels:

19. How old patients were did not seem to be related to what form of coping they used or how distressed they were. It did however, seem to matter in relation to what form of attributions patients made. Younger patients were more likely to blame their own behaviour for their illness, they were also more likely to attribute to circumstances at discharge. Older patients on the other hand, were more likely to attribute the MI to God.

Relationships between causal attributions and coping strategies:

20. Behavioural self blame and other blame were related to avoidant coping at discharge and characterological self blame at 2 months was related to avoidant coping at that same time. No significant concurrent relationships were found between causal attributions and attention coping.

21. Characterological self blame at one time predicted avoidant coping at all subsequent times, with one exception, the relationship was not significant at 2 months. No causal attributions significantly predicted attention coping.

22. When using coping strategies as predictors of causal attributions the results showed that avoidant coping at discharge was predictive of

behavioural self blame at 12 months and avoidant coping at 2 months was associated with both characterological self blame and behavioural self blame at 6 months.

Relationships between causal attributions and levels of distress:

23. When assessing concurrent relationships, ***characterological self blame*** was found to be related to higher levels of anxiety, depression and overall distress at all assessment times. ***Other blame*** was also related to higher distress levels both at discharge and at 6 months and finally ***behavioural self blame*** at discharge was related to both anxiety and depression as well as to overall distress.

24. After controlling for concurrent distress levels ***characterological self blame*** at discharge was found to be predictive of higher levels of anxiety, depression and overall distress at all subsequent times.

25. Using distress levels at one time to predict causal attributions at subsequent times after controlling for concurrent attributions, showed that distress including both anxiety and depression at 2 months were related to characterological self blame at 6 and 12 months and to other blame at 6 months. Furthermore, 6 months distress was also related to characterological self blame at 12 months.

Relationships between coping strategies and levels of distress:

26. ***Avoidant coping*** was significantly related to higher anxiety, depression and overall distress at all assessment times. On the other hand, avoidant coping at one time did not predict distress levels at subsequent times. Attention coping did not show significant relationships with distress levels within each assessment time or across times.

27. Anxiety, depression and overall distress predicted avoidant coping at all subsequent times but were not significantly related to attention coping.

Multivariate results:

Explaining levels of distress:

28. ***Blaming one's own character*** for the illness and/or using ***avoidant coping*** explained between 20 and 34 % of the variance in concurrent levels of distress.

Explaining coping strategies:

29. Using avoidant coping in the past was not the only predictor of avoidant coping in the future, ***characterological self blame*** and ***levels of distress*** also significantly predicted subsequent avoidant coping, leaving 20 to 24% of the variance in later avoidant coping explained.

Explaining causal attributions:

30. Causal attributions at one time were the strongest predictors of causal attributions at subsequent times. However, other variables added to these predictions, in particular ***avoidant coping*** and levels of ***anxiety.***

CHAPTER 8

Summary, Comments and Discussion.

Chapter 8 presents a summary and discussion of the study findings. It summarises and discusses what the results showed, ideas about why things happened the way they did, how it related to the research expectations and what was surprising about the findings. The measures are also discussed, in particular in relation to how well or badly they formed. Furthermore, chapter 8 includes a discussion on how the results related to previous findings and to the general research literature on this topic, how they related to theory and finally what sort of implications they might have for further research, theory and for care of patients with MI.

8.1. How did the study findings relate to the research expectations/hypothesis?

This first section will briefly summarise the predictions tested in the current research and present results regarding each one, which will then be discussed in more detail later.

The present study sought to examine the nature of coping strategies and causal attributions, how these factors interacted with each other and related to and predicted levels of distress over a period of 1 year in patients following a first MI. Based on previous research findings, models and theories, the study set out to test the following 7 hypothesis:

1. *Coping strategies will change over time.*

2. *Coping strategies will be concurrently related to and predict levels of distress. In particular, avoidant coping will be related to less distress at discharge but higher distress at later follow up.*

3. *Causal attributions will be related to and predict coping strategies.*

4. *Patients will be most likely to attribute their illness to stress and smoking.*

5. *Behavioural self blame will be concurrently related to and predict lower levels of distress.*

6. *Characterological self blame will be concurrently related to and predict higher levels of distress.*

7. *Other blame will be concurrently related to and predict higher levels of distress.*

Six of these 7 hypothesis were either fully or partially supported by the study findings. Coping was found to change over time and avoidant coping was concurrently related to levels of distress, coping was however, not found to predict subsequent distress. Certain causal attributions were shown to be both related to and predict how patients reported to cope with the illness. The most commonly reported causes for the MI were stress and smoking. Furthermore, characterological self blame and other blame were found to be concurrently related to higher levels of distress and blaming one's own character was found to predict higher subsequent distress. The only hypothesis, which was not supported by the present results was the prediction that behavioural self blame would be related to and predict lower levels of distress, on the contrary behavioural self blame at discharge was related to higher distress. All these and other findings will be discussed further in the following sub-sections.

8.2. What did the results show and how does that relate to previous research findings?

Coping.

While first summarising coping results and how they related to previous research findings, the results of this study showed that reports of coping by ***acceptance*** were significantly higher than reports of other coping scales. Previous studies on coping have reported similar findings. For instance, in a study by Heim et al. (1993), where they assessed coping reported by patients with breast cancer over a period of 3 to 5 years, acceptance was among the most reported coping strategy at all times. Carver and

colleagues (1993) showed similar results. They used the COPE in assessing coping responses reported by women with breast cancer over a period of 1 year and found that reports of coping by acceptance were significantly higher than any other scale at all assessment times. These findings have therefore been replicated across different study populations, in these cases for both patients with MI and cancer.

After grouping the coping strategies into attention versus avoidant coping, the results showed that avoidant coping strategies were significantly related to higher levels of distress at all assessment times however, avoidant coping at one time was not found to predict levels of distress at subsequent times. Attention coping was not found to be significantly related to or predictive of distress levels at any time. These results both support and contradict previous research findings. Coping has previously been found to be both related to and/or predictive of distress, in particular passive or avoidant coping strategies have been found to be related to higher distress, while attention and more active coping strategies have been found to be related to lower distress levels (Carver et al., 1993; Stanton & Snider, 1993; Dunkel-Schetter et al., 1992; Jahanshahi, 1991; Frank et al., 1987; Bombardier et al., 1990; Harkapaa, 1991; Weickgenant et al., 1993; Agren et al., 1993). The study presented here showed that avoidant coping strategies were related to higher levels of distress at all times, which replicates the majority of previous research findings. On the other hand, coping was not found to be predictive of subsequent distress, which contradicts most previous findings. This might therefore be considered as a surprising result, however recent research (Weinman, et al., 1994; Earl et al. 1994) on coping with chronic illness has shown that coping is not predictive of illness outcome, which supports the present findings. These latest findings in this area, including this one, seem to suggest that how patients cope has no direct predictive power in relation to outcome following illness, but might more likely be mediated by other factors and has therefore not been found to be directly predictive of distress. In fact the present study showed support for reverse "causality", i.e., it showed that higher anxiety, depression and overall distress at one time were predictive of avoidant coping at all subsequent times, a finding, as far as the author is aware of, not reported in previous studies. The more distressed the patients were at one time, the more likely they were to use avoidant coping strategies at subsequent times.

The present study also assessed the "time x strategy" hypothesis, put forward by Suls and Fletcher (1985), in relation to avoidant coping and adjustment. Previous research findings have shown that avoidant coping is adaptive, as far as adjustment is concerned, in the short-term but maladaptive in the long-term (Suls & Fletcher, 1985; Holmes & Stevenson, 1990; Smith et al., 1990). This result has also found support in longitudinal studies on coping with MI (Agren et al. 1993). Furthermore, cross-sectional studies, also examining coping shortly following MI onset, have shown coping by denial to be related to less distress (Froese et al., 1974; Havik & Maeland, 1988). These findings were however, not replicated in the present study, as pointed out above, avoidant coping was related to higher levels of distress at all assessment times. This could be due to, as was argued in chapter 7 (sub-section 7.4.4.) the time of the coping data collection. The present study first assessed coping 2 weeks following the illness onset and failed to find a relationship between avoidant coping and less distress, while other studies, which have shown avoidant coping to be related to lower distress, have in most cases assessed coping within 3 days of illness onset (Suls & Fletcher, 1985). However, when taking a closer look at the correlational results presented here, between avoidant coping and concurrent levels of distress (see table 7.4.1.), it can be seen that the correlations between avoidant coping and levels of distress at discharge are much lower than between avoidant coping and distress levels at later follow up ($r = .28$ at discharge vs. r as high as $=.56$ at later follow up). Thus, although avoidant coping did not show a relationship with lower distress at discharge, it was not as strongly related to distress at that time as subsequently, in fact it did not show a significant relationship with discharge levels of depression.

Coping strategies were found to change over time, with overall coping being most early on following the illness onset, a result also found in Carver et al's (1993) study. Furthermore, patients were found to report different ways of coping for coping with the MI from the way they cope with other stressful situations in their lives. They were found to use avoidant coping significantly more for coping with the MI, while they used attention coping significantly more when coping with other stressful situations. These results provide further support for the idea, that coping is a continuous, transactional process which is modified by experience both

within and between stressful episodes, rather than a stable unchangeable trait (see chapter 2, sub-section 2.1.2.). The present study could however, be criticised for the way it assessed how patients coped with other stressful situations in their lives. They were not given any specific idea to keep in mind when they answered this question. They were simply asked to say how they usually coped with other stressful situations in their lives. As Lazarus (1993a) pointed out, this type of assessment is open to criticism.

Lazarus argues that by asking in this open way, subjects might be responding by given just a vague impression about how they would prefer to cope, which might be influenced by what they think is socially desirable or ideal way of coping, not actually what they have thought or done. This kind of criticism could however, apply to any form of psychological assessment, where people might try to present themselves in a desirable way. Lazarus responds to that by reasoning that "***if subjects must remember or relive an actual incident and coping thoughts and actions employed, there is a good chance that they actually thought or did what they reported***" (Lazarus, 1993a, page 242). In this manner, asking the patients how they were coping with the MI would, according to Lazarus, give a "true" response, whereas asking them how they usually coped with (any) other stressful situations might not present a "true" response.

Whether one agrees with that or not, the results of the study presented here, could imply that this was the reason for the finding that patients reported to use attention coping more, and avoidant coping less (a more acceptable or better way of coping), for coping with other stressful situations in their lives than when coping with the MI. The present study had no way of knowing what patients had in mind when they answered this question, each patient would therefore have had a different situation in mind. It is however, likely that they did not think of another illness as the nature of the question required them to think of <u>other</u> stressful situations. A way to prevent this difficulty in the future and gain a "truer" response, might be to ask each participant to think of a particular situation and in that way assess and compare coping strategies across different encounters.

Whether the finding that patients coped differently with their illness as opposed to other stressful life events, is a valid finding or not, the result

remains that coping with the MI did change over time, providing support for the process oriented coping approach. This finding could also be interpreted as a support for a "true" response because if patients had been trying to present their coping in a desirable or socially acceptable way, one could have expected the same desirable response at all assessment times.

Causal attributions.

The attributional findings of the present study showed that among the most commonly mentioned causes for the MI were ***stress, smoking, hereditary factors, eating fatty foods*** and ***work items***. This is not a surprising result as most studies assessing attributions following MI have shown similar findings (Fielding, 1987; Mumma & Corkle, 1982-83; Rudy, 1980; Koslowsky et al., 1978; Affleck et al., 1987; Burgess & Hartman, 1986; Naea de Valle & Norman, 1992). These results could indicate, as was pointed out in chapter 6 (sub-section 6.2.9.) that these patients have knowledge of what are thought to be the main causes for an MI and are in an agreement with medical opinion. However, ***stress*** comes up as the most frequently reported cause both in this and previous research. This, as Fielding (1987) pointed out, is conflicting with current medical opinion, which emphasis biological causes rather than psycho-social ones. Rudy (1980) argued in an attempt to explain this finding, that attributing to tension or stress is a safe explanation because it is difficult to dispute its presence since it is not easily measurable. Thus, Rudy (1980) suggested that by identifying stress as a cause might perhaps work to decrease feelings of self-blame and at the same time make it possible to externalise the cause. This might indeed be the case, it would however, not fit with the identification of an externalised cause used in this research. as the judges who grouped the individual attributions for this study, grouped ***stress*** as a part of behavioural self blame.

Whatever the reason for this popular psycho-social cause might be, the significance of its importance can best be evaluated in relation to illness outcome. In this respect, attributing to stress has been found, at least in one study, to be predictive of greater morbidity in patients with MI 8 years following the illness onset (Affleck et al., 1987). Another study (Fielding, 1987), found that patients with MI commonly attributed their illness to stress but at the same time rated it as less controllable than many other

factors. Bearing these results in mind and considering the common belief by patients with MI, conformed in this study, that stress is a cause for their illness, it has to be considered valuable in rehabilitation and other health care to assess patients causal attributions which in turn might identify difficulties patients may experience.

Another present finding which was found to be related to previous research results (Meyer, 1983) showed that younger patients were more likely to attribute their MI to their own behaviour than older patients. Older patients were on the other hand more likely to attribute to God. This result is interesting considering the medical understanding of the causes for an MI (Jowett & Thompson, 1989). These results seem to fit the medical explanation, i.e., the older one gets the more likely they are to suffer an MI, while younger people are less prone to have an MI unless they practice risk factor behaviour. It could also be speculated that this result is due to a sense of vulnerability perceived more by younger patients. By attributing the illness to their own behaviour younger patients might feel in more control, i.e., they could change their behaviour for example by reducing risk factors, which might make them feel less vulnerable for reoccurrence of the illness, whereas for older patients the matter is in the hands of God.

Women were more likely to blame their own character for their illness than men, women were also more likely to attribute to biology, God and other people. These results could imply that women simply make more attributions than men, which could be due to the fact that women are less likely to suffer an MI than men are (Jowett & Thompson, 1989), and therefore their need for causal search might be greater than for men. It might be easier for male patients to find a cause as they have more people to compare themselves with, i.e., more men have MI than women, while women might be more confused in their causal search which results in more attributions being made.

Attributing to behavioural self blame was found to be related to higher distress levels at discharge. Considering that stress was grouped in the behavioural self blame category and keeping in mind previous research findings presented earlier, showing that attributing to stress was related to worse adjustment, the first explanation for this result might imply that this

was due to attributions to stress alone. However, when testing this idea, attributing to stress on its own was not found to be related to higher levels of distress at discharge or at any other assessment time.

A possible explanation for this finding could however be, that attributing to behavioural self blame early following an illness onset is related to higher distress, while at a later stage this form of attributing is no longer associated with distress. This would imply a "time x attributions" hypothesis as regards attributing to behavioural self blame and illness adjustment. As was pointed out in chapter 3 of this thesis, previous research, in particular studies assessing causal attributions following accidents have on the one hand, found self blame to be related to better adjustment when assessed 1 month to many years following the injury (Janoff-Bulman & Wortman, 1977; Schulz & Decker, 1985. On the other hand, other studies have shown self blame to be associated with worse adjustment when examined close to the events onset (Kiecolt-Glaser & Williams, 1987; Frey et al., 1985). None of these studies did however, divide self blame into behavioural self blame vs. characterological self blame which could account for these differences, although the results found in the present study did not seem to support that idea. Nevertheless, it has to be considered a possibility that these results could be due to the way behavioural self blame has been examined and categorised across different studies. If speculating, why attributing to behavioural self blame early following a negative event, such as MI, seems to be related to worse adjustment, this might imply that patients are distressed because of worries at an early stage about their ability to change their behaviour which if not carried out, could result in further health complications or illness recurrence. At a later stage blaming one's own behaviour for an event might be related to feelings of control, in particular if behaviour modification has been achieved, which in turn leaves this type of attribution no longer associated with distress. This explanation might apply as regards illness like MI and other curable illnesses, which in many cases require patients to make lifestyle changes. However, to be conclusive in this matter all these points need further examination.

Blaming one's own character for the MI was found to be related to higher distress at all assessment times. Characterological self blame at discharge was also found to be predictive of higher distress at all subsequent times.

This finding replicates previous study results, which have shown that attributing an illness or other events to one's own character is associated with more distress (Janoff-Bulman, 1979; Timko & Janoff-Bulman, 1985; Major et al., 1985; Mueller & Major, 1989). This is an exciting result, as it appears that the research literature is on its way to identify a maladaptive causal attribution. This has been explained for example, by Janoff-Bulman (1979), as a result of perceived controllability over the factor(s) being blamed. Attributing to characterological self blame is predicted to be related to lack of control believes, which could therefore lead to worse adjustment, a kind of helplessness feeling. Also, Janoff-Bulman (1979) suggested that people who see their own character as a cause for a negative event are concerned with the past, not how they can avoid negative outcomes in the future, rather what it was about them that led to or resulted in a negative outcome. Characterological self blame could also be associated with poorer adjustment as a result of how unchangeable it might feel. Blaming one's own character, includes attributions to one's personality and character, i.e., how a person perceives themselves to be, which hardly allows any space for modification or control.

The results further showed that characterological self blame as an early response to an MI seemed to be particularly maladaptive, as it predicted subsequent distress. This point is worth further examination as it could have implications for rehabilitation.

As with characterological self blame, the attribution research literature could be on its way to identify a maladaptive attributional response as regards ***other blame.*** The present study, found ***other blame*** to be related to higher levels of distress both at discharge and at 6 months post MI. This finding supports pervious research (Taylor et al., 1984; Affleck et al., 1987; Tennen & Affleck, 1990), which in the majority of cases has found blaming other people to be related to higher distress and worse general adjustment. As was outlined in chapter 3 (sub-section 3.1.10.), various explanations have been put forward in order to explain this finding, such as the psychodynamic theories of immaturity and the theory of excuse making. Considering that there is little evidence for other blame as a response to chronic illness, although the evidence that does exist has shown other blame to be linked with poorer recovery and adjustment (Taylor et al., 1984; Affleck et al., 1987), the present finding could

perhaps best be explained by excuse theory. As outlined in chapter 3, excuse theory suggests that people try to distance themselves as responsible for a negative outcome and therefore, in order to externalise the cause they shift attributions from themselves to others. Bearing in mind what Tennen & Affleck (1990) argued to be among important components of other blame, i.e., the presence of another person at the time of the event and the authority, ability and knowledge of the person, excuse theory seems to fit best with other blame in the case of chronic illness. As chronic illness is unlikely to have a set starting point which the patient could link to another person, the patients might be more likely to be trying to distance themselves as responsible by blaming other people. This however, is associated with worse adjustment, in this case higher distress, as excuse theory points out, because even though the patient might see themselves as unlinked to the illness onset they are still faced with an illness. As the present study did not directly test excuse theory and its relation to other blame, the above points have to be considered only as speculations and in need of further examination. Nevertheless, the result remains that blaming other people for the illness was related to higher distress and therefore has to be considered an important empirical finding, in particular in the light of previous research findings. A point worth addressing in relation to implications for cardiac rehabilitation.

8.3. How well did the measures perform?

As there is a growing interest in how assessment is carried out both in relation to coping strategies (see for example Parker & Endler, 1992) and causal attributions (see for example Turnquist et al, 1988 and Norman, 1991) and how well or badly assessment tools perform, this section will briefly comment on the assessment instruments used in the present study.

The COPE (Carver et al., 1989), was used to examine how patients were coping with the illness. As presented previously (see chapter 5), the COPE is a multidimensional coping assessment tool, designed to examine a variety of coping strategies. Patients main criticism of the COPE in this study, was how long and repetitive it was, they complained that they felt they were answering the same questions over and over again and that the questions sounded "silly" and boring. Most patients (over 60%) became

irritated while answering the COPE and said they didn't understand the meaning of the questions. Some questions were particularly difficult, such as "I try to grow as a person as a result of this experience". As the COPE was not created and developed using a British population, it is likely that the wording of this question and a few others did not apply to the study participants. It might be that the COPE needs to be standardised for a British population in order for it to be used in a more successful administrative way.

At the 6 months follow up point the author decided to apply a different method in assessing coping. This was carried out mainly for three reasons: Firstly, concerns over the COPE's validity, in other words, the author had a "bad" feeling that the COPE was not picking up how patients were actually coping with the illness. Secondly, it was considered important to examine how patients were coping with particular aspects of the illness, such as changing eating habits, stopping smoking etc. Thirdly, as a number of the patients asked (in an irritated voice), if they had to answer the COPE again, after having completed it on two occasions already, the author considered it "wise" not to include the COPE in the 6 months data collection, in case patients might refuse to continue participation in the study. As the 6 months coping data was not included in the findings presented in this thesis, the methodology used will only be described here briefly in order to explain its relationship to the COPE. This coping assessment was based on open ended questions asking each patient what they had done to manage a specific task, such as "What did you do to stop smoking?" All responses were tape recorded. The author then listened to each recording, wrote down the responses and then coded them into either attention or avoidant coping. This data has not been analysed further, however based on the responses given the author felt confident that the COPE was actually performing well as regards assessment of coping, i.e., in the authors opinion the responses could have fitted into the 15 coping scales provided by the COPE, implying that the COPE was capable of detecting most forms of coping reported by this patient population.

Other issues in favour of the COPE, is the result of the two factor solution carried out in the present study including the COPE's 15 coping scales. This analysis showed that 13 of the coping scales presented by the COPE grouped together and fitted the distinction into ***attention coping*** on the one

hand and ***avoidant coping*** on the other. This is an exciting result which implies that various different coping strategies do indeed group into two broader dimensions of coping, at least following illness, and the COPE is proving to be a valid measure of these two dimensions. It would be interesting to see whether this could be replicated in other studies using the COPE, and across different patient populations.

The general conclusion which could be drawn from the present study as regards the COPE as an assessment tool, implies that the COPE is a valid measure of coping but difficult to administer as a result of how long and repetitive it is.

The causal attribution assessment instrument (the CAUSE) used in this study, was a success story all the way, in particular as regards administration. No complaints were noted about this measure, on the contrary patients seemed quite happy and interested in answering the causal attribution questions. Whether that was due to how good the assessment tool was or simply because patients enjoyed wondering about what had caused their illness, remains to be said. However, keeping attribution theory in mind (Heider, 1958; Kelley, 1967), which predicts that majority of people will engage in attributional search following a negative life event, the latter explanation is probably more likely. Nevertheless, the fact remains that the CAUSE was an easy instrument to administer and quick to complete. Furthermore, this assessment tool examined causal attributions in a variety of ways, including both open ended and checklist questions. By using open ended questions before demonstrating a list of causes, it was possible to examine the patient's own causal thoughts and avoid demand effect created by using a list only.

The CAUSE has not been systematically standardised or validated however, if considering the present study and bearing in mind the judges' agreement while grouping the causal items, the instruments' consistency over time and its cross-validation across spontaneous, provoked and checklist assessment methods, the CAUSE's validity could in fact be considered reasonably good. Furthermore, it is based on previous assessment tools which have been successfully used in previous research assessing causal attributions following illness (see chapter 5). The response format is not on an interval scale, which might be considered not

to go in the instruments' favour. This kind of a response scale can sometimes be restricting as regards statistical analysis of the data. However, this was not found to be the case in the present study as the number of statistical methods available for non interval data includes a range of appropriate methods for the analysis which were required in this study.

Thus, the general conclusion drawn from the present study, would be to recommend the CAUSE as an assessment tool of causal attributions following MI.

Finally, no complaints were noted concerning the distress measure, the Hospital Anxiety and Depression scale (HAD) (Zigmond & Snaith, 1983), which appeared to be easy to understand and administer.

8.4. How did the study findings relate to theory and what theoretical implications might they have?

One of the main theoretically based predictions of the present study was that causal attributions would predict patients' coping strategies. This prediction based on Leventhal's self regulation model (Leventhal et al., 1984) was supported as far as characterological self blame and avoidant coping was concerned. Characterological self blame at one time was predictive of avoidant coping at subsequent times. The model does however, also predict that as a result of appraising the effectiveness of coping the representation (including causal attributions) can be changed, and in this manner coping could influence causal attributions. This was tested in the current research which showed that avoidant coping at 2 months predicted both self character and behavioural self blame at 6 months and using avoidant coping at discharge was found to be associated with behavioural self blame at 12 months. On the whole these findings seem to support Leventhal's self regulation model, however only as regards certain causal attributions and certain coping strategies. These results according to the model imply that blaming one's own character at discharge predicted avoidant coping at 2 months. The 2 months coping was then appraised and could therefore affect causal attributions at 6 months, which it did, suggesting that 2 months avoidant coping was

appraised as effective coping in some ways, i.e., leading to characterological self blame again at 6 months. However, in other ways it might have been appraised as ineffective, leading towards a change in causal attributions, i.e., the result that 2 months avoidant coping also predicted behavioural self blame at 6 months.

In general the research findings revealed in the present study could be taken as a support for Leventhal's self regulation model, at least as far as certain kinds of attributions are concerned, in this case characterological self blame and avoidant coping.

While referring back to Janoff-Bulman's (1979) explanation for why characterological self blame is related to higher levels of distress, the same explanation could account for why characterological self blame is related to and predictive of the use of avoidant coping. Those who blame their own character are likely, according to Janoff-Bulman's prediction (1979), to perceive little control over the illness and be concerned with the past rather than the future. As this nature of characterological self blame implies that little can be done as a response to the event this might lead to the use of avoidant coping strategies, including feelings of withdrawing or giving up.

Patients' coping strategies were found to divide into two broader dimensions of coping, attention vs. avoidant coping, which were in turn shown to be related to different kinds of attributions and levels of distress. This finding clearly has implications for coping theory, in particular in the light of how the present results related to previous research findings, which in most cases have found avoidant coping to be linked to worse illness outcome (see previous discussion page 227). One of the main views of coping theory has been to divide coping into emotion vs. problem focused coping (Folkman & Lazarus, 1980), and assess coping in this manner in relation to outcome variables. Although, the present results do not minimise the importance of the distinction into emotion vs. problem focused coping, they do provide, along with previous study findings, further support and emphasise the importance of looking at and referring to coping in terms of attention vs. avoidant coping responses as well.

As regards attribution theory (Heider, 1958; Kelley, 1967), the results presented here, could be interpreted as having provided support for the prediction that majority of people engage in attributional search following a negative event. Over 80% of this patient population mentioned a cause for their illness when asked an open indirect question about what attributional ideas they had. Furthermore, the emphasis attribution theory (Kelley, 1967) places on the importance of feelings of control over the event, also found some support in the present study findings. The theory predicts that people are more likely to attribute to controllable factors. This finding could be seen in this population in the fact that the majority of patients attributed their illness to behavioural self blame, which provides them with some control, if applied, over both further health complications and/or recurrence of the illness.

Characterological self blame was found to be related to and predictive of higher levels of distress. This finding could imply support for the model of learned helplessness (Abramson et al., 1978) which predicts that people who attribute to internal, stable and global factors will show poorer adjustment. In this case attributing to characterological self blame is an internal attribution (something within the person themselves), stable (something that is persistent) and global (it can appear in a range of situations, not just one). This finding also provides support for Janoff-Bulman's (1979) distinction into self behaviour vs. characterological self blame in relation to adjustment. However, behavioural self blame was found to be related to higher distress levels at discharge which does not support a clear distinction between behavioural self blame and characterological self blame as regards distress. This result could, as was pointed out in section 8.2., be due to a time effect on behavioural self blame, which might suggest that the distinction into self character and behavioural self blame needs to take into account the time an attribution is made, at least following illness. This idea does however, need further assessment.

8.5. Implications for the care and rehabilitation of cardiac patients.

As was pointed out in chapter 1 of this thesis, anxiety, depression and overall distress are considered among the most formidable problems in cardiac rehabilitation (Hackett & Cassem, 1974; Langosch, 1989).

Furthermore, depression following MI has been found to be related to worse health outcome (Frasure-Smith & Prince, 1987). The results of the study presented here showed that both the use of avoidant coping and blaming ones own character for the illness onset as well as blaming other people, were either concurrently related to levels of distress and/or predictive of subsequent distress, explaining a considerable amount of the variance in distress, as high as 34%. These findings therefore have an important implication for the care and rehabilitation of cardiac patients. They imply that identifying ways of coping and patients' causal attributions could aid rehabilitation and the recovery process as they have been found to interact with levels of distress. If patients who used avoidant coping and/or attributed their illness to characterological self blame could be identified, problems as regards distress might be prevented. This appears to be particularly important early following the illness onset as blaming one's own character for the MI was found to predict higher subsequent distress levels. These findings could imply that providing training in altering certain attributions, such as characterological self blame, might be beneficial. However, as this study was not an intervention study one has to be aware of making too strong conclusions. It does although appear that some coping reactions and causal attributions are problematic as regards distress, it is however, difficult to say if others would be considerably better. These points are nevertheless worth investigating.

The present finding, showing that a number of patients were unable to recognise how different causes were related to each other, such as eating fatty foods and high levels of cholesterol, could also have implications for both rehabilitation and health education. As Norman (1991) pointed out, it is important to provide people with information on how different causal factors could be related in order for them to successfully manage to prevent further health problems. Furthermore, it is valuable for health care professionals and health educators to gain information on where there might be gaps in people's knowledge, as this might provide them with information as regards where education and rehabilitation should aim.

8.6. Implications for future research.

As mentioned in section 8.2., the current research found a support for the process oriented approach of coping. Coping was found to both change

over time following the MI and across different stressful encounters. Although not suggesting that the trait approach to coping is not important, these results were not found to support the trait view of coping which assumes that coping is primarily a property of the person and variations in the stressful situation are of little importance. The results of the present study suggest that coping should be viewed and assessed as a changeable process affected both by time and situations, which implies a need for ***longitudinal studies*** in the assessment of coping rather than cross-sectional research, in particular following a chronic condition. This same argument applies to attributional research, as causal attributions were found to change as time passed. Furthermore, longitudinal studies are required in order to assess whether behavioural self blame is mediated by time as regards adjustment.

A limitation of the present study concerns the issue that its findings can only be applied to patients with MI, they can not be generalised to other patient populations. Whether other populations experiencing matching stressful events would respond in a similar manner has to be left unsaid. However, assessing this issue is an interesting and an important task for future research.

Whether findings can be replicated across different study populations will at least to some degree rely on the assessment tools chosen for each study. It would for example, be interesting to see if the COPE's coping scales continue in other studies, to group into two dimensions of attention vs. avoidant coping. Furthermore, based on the present findings, a consideration for future research includes assessing whether characterological self blame is related to and predictive of adjustment in different populations. However, in order to provide comparable results, characterological self blame needs to be defined, categorised and coded in the same manner across different studies.

The results of this study, in particular in relation to causal attributions, also provide interesting questions as regards other variables. For example, if attributions predict distress do they also predict other outcomes, such as

lifestyle changes? Furthermore, in the light of the present finding, which showed that coping did not predict the other variables, it might be a task for future research to examine what, apart from distress, influences and motivates coping.

Finally, in order to make use of results gained in studies like the one presented here and others similar, future research needs to aim towards intervention studies where the benefits of training in coping and causal attributions following illness could be assessed.

8.7. Conclusion.

In the year following a first MI patients' causal attributions were found to predict their coping strategies, in particular avoidant coping, providing support for Leventhal's self regulation model. Causal attributions, such as characterological self blame and other blame were also found to be related to and/or predictive of subsequent higher levels of anxiety, depression and overall distress. Coping strategies were not found to predict subsequent distress, they were however, concurrently associated with distress at all assessment times.

With regard to care and rehabilitation of cardiac patients the results of this study point towards the importance of examining and, if necessary altering certain causal attributions and coping strategies in order for the patient to gain the best possible recovery.

References.

Abramson. L.Y., Seligman, M.E.P. & Teasdale, J. (1978): Learned Helplessness In Humans: Critique and Reformulation. *Journal of Abrormal Psychology, Vol. 87*. 49-74.

Affleck, G., Allen, D., McGrade, B.J. & McQueeney, M. (1982): Maternal Causal Attributions At Hospital Discharge of High - Risk Infants. *American Journal of Mental Deficiency, Vol. 86* (6). 575-580.

Affleck, G., McGrade, J., Allen, D.A. & McQueeney, M. (1985): Mother's Beliefs About Behavioural Causes For Their Developmentally Disabled Infant's Condition: What Do They Signify? *Journal of Pediatric Psychology, Vol. 10* (3). 293-302.

Affleck, G., Tennen, H. & Croog, S. (1987): Causal Attribution, Perceived Benefits and Morbidity After a Heart Attack: A 8 Year Study. *Journal of Consulting and Clinical Psychology, Vol. 55* (1). 29-35.

Agren, B., Ryden, O., Johnsson, P. & Nilsson, E. (1993): Rehabilitation After Coronary Bypass Surgery: Coping Strategies Predict Metabolic Improvement And Return To Work. *Scandinavian Journal of Rehabilitation in Medicine, Vol. 25*. 83-95.

Aldwin, C.M. & Revenson, T.A. (1987): Does Coping Help? A Re-examination of the Relation Between Coping and Mental Health. *Journal of Personality and Social Psychology. Vol. 53 (*2). 337-348.

Antaki, C. & Berwin, C. (1982): *Attributions and Psychological Change: Applications of Attributional Theories to Clinical and Educational Practice.* London. Academic Press.

Aspinwall, L.G. & Taylor, S.T. (1992): Modeling Cognitive Adaptation: A Longitudinal Investigation Of The Impact Of Individual Differences and Coping On College Adjustment and Performance. *Journal of Personality and Social Psychology, Vol. 63* (6). 989-1003.

Bagenal, S.F., Easton, D.F., Harris, E., Chilvers, C.E. & McElwain, T.J. (1990): Survival Of Patients With Breast Cancer Attending Bristol Cancer Help Center. *Lancet,* (Sept.8). 606-610.

Barrowclough, C. (1991): *Attributions And Expressed Emotion In The Relatives Of Schizophrenic Patients.* PhD Thesis, University of London, Faculty Of Science, Royal Free Hospital School Of Medicine.

Beck, A.T., (1976): *Cognitive Therapy and Emotional Disorders.* New York, International University Press.

Bennett, S.J. (1992): Perceived Threats Of Individuals Recovering From Myocardial Infarction. *Heart & Lung, Vol. 21* (4). 322-326.

Ben-Sira, Z. & Eliezer, R. (1990): The Structure of Readjustment After Heart Attack. *Social Science and Medicine, Vol. 30* (5), 523-536.

Billings, A.C. & Moos, R.H. (1981): The Role of Coping Responses and Social Resources In Attenuating The Stress Of Life Events. *Journal of Behavioural Medicine, Vol. 4* (2). 139-157.

Billings, A.G. & Moos, R.H. (1984): Coping, Stress and Social Resources Among Adults With Unipolar Depression. *Journal of Personality and Social Psychology, Vol. 46* (4). 877-891.

Bombardier, C.H., D'Amico, C. & Jordan, J.S. (1990): The Relationship of Appraisal and Coping To Chronic Illness Adjustment. *Behaviour Research and Therapy, Vol. 28* (4). 297-304.

Bolger, N. (1990): Coping As A Personality process: A Prospective Study. *Journal of Personality and Social Psychology, Vol. 59* (3). 525-537.

Blomkvist, V., Theorell, T., Jonsson, H., Schulman, S., Berntorp, E. & Stiegendal, L. (1994): Coping Style In Relation To The Consumption Of Factor Concentrate In HIV - Infected Hemophiliacs During The Years After Their Infection Became Known. *Psychotherapy and Psychosomatics, Vol. 61.* 205-210.

Blumhagen, D. (1980): Hyper-Tension: A Folk Illness With A Medical Name. In Blumhagen, D.: *Culture, Medicine and Psychiatry*. Dordrecht, Holland, D. Reidel Publishing Co.

Bradbury, T.N. & Fincham, F.D. (1990): Attributions In Marriage: Review and Critique. *Psychological Bulletin, Vol. 107*, (1). 3-33.

Bryman, A. & Cramer, D. (1992): *Quantitative Data Analysis For Social Scientists*. London, Routledge.

Brickman, P., Ryan, K. & Wortman, C.B. (1975): Causal Chains: Attribution Of Responsibility As A Function Of Immediate And Prior Causes. *Journal of Personality and Social Psychology, Vol. 32* (6). 1060-1067.

Brown, G.K. & Nicassio, P.M. (1987): Development Of A Questionnaire For The Assessment Of Active And Passive Coping Strategies In Chronic Pain Patients. *Pain, Vol. 31*. 53-63.

Brown, G.K., Nicassio, P.M. & Wallston, K.A. (1989): Pain Coping Strategies And Depression In Rheumatoid Arthritis. *Journal of Consulting Clinical Psychology, Vol. 57*. 652-657.

Burgess, A.W. & Hartman, C.R. (1986): Patient's Perceptions Of The Cardiac Crisis: Key To Recovery. *American Journal of Nursing, May*. 568-571.

Callahan, L.F., Brooks, R.H. & Pincus, T. (1988): Futher Analysis Of Learned Helplessness In Rheumatoid Arthritis Using A "Rheumatology Attitudes Index". *Journal of Rheumatology, Vol. 25*. 1271-1277.

Carver, C.S. (1989): How Should Multifaceted Personality Constructs Be Tested? Issues Illustrated By Self-Monitoring, Attributional Style and Hardiness. *Journal of Personality and Social Psychology, Vol. 56*. 577-585.

Carver , C.S. & Scheier, M.F. (1981): *Attention and Self-Regulation: A Control-Theory Approach To Human Behaviour.* New York. Springer Verlag.

Carver, C.S., Scheier, M.F. & Weintraub, J. K. (1989): Assessing Coping Strategies: A Theoretically Based Approach. *Journal of Personality and Social Psychology, Vol. 56* (2). 267-283.

Carver, C.S., Pozo, C., Harris, D., Noriega, V., Scheier, M.F., Robinson, D.S., Ketcham, A.S., Moffat, F.L., & Clark, K.C. (1993): How Coping Mediates the Effect of Optimism on Distress: A Study of Women With Early Stage Breast Cancer. *Journal of Personality and Social Psychology, Vol. 65* (2), 375-390.

Cay, E.L., Vetter, N., Philip, A. & Dugard, P. (1973): Return To Work After A Heart Attack. *Journal of Psychosomatic Research, Vol. 17.* 231-243.

Cay, E.L. (1982): Psychological Problems in Patients After Myocardial Infarction. *Advances in Cardiology, Vol. 29.* 108-112.

Chodoff, P., Friedman, S. & Hamburg, D. (1964): Stress, Defences and Coping Behaviour: Observations In Parents Of Children With Malignant Diseases. *American Journal of Psychiatry, Vol. 120.* 743-749.

Christman, N.J., McConnell, E.A., Pfeiffer, C., Webster, K.K., Schmitt, M. & Ries, J. (1988): Uncertainty, Coping and Distress Following Myocardial Infarction: Transition from Hospital to Home, *Research in Nursing & Health, Vol. 11.* 71-82.

Cohen, F. (1987): Measurement Of Coping. In Kasl, S.V. & Cooper, C.L. (eds): *Stress And Health Issues In Research Methodology*, London, John Wiley & Sons Ltd.

Cohen, F. & Lazarus, R.S. (1979): Coping With the Stresses of Illness. In: Stone, G.C., Cohen, F. & Adler, N.E. (eds). *Health Psychology*, San Francisco, Jossey-Bass. 217-254.

Cohen, F., Reese, L.B., Kaplan, G.A. & Roggio, R.E. (1986): Coping With the Stresses of Arthritis. In: Moskowitz, R.W. & Haug, M.R. *Arthritis and the Elderly,* New York, Springer.

Coyne, J.C. & Smith, A.F. (1991): Couples Coping With A Myocardial Infarction: A Contextual Perspective On Wives Distress. *Journal of Personality and Social Psychology, Vol. 61* (3). 404-412.

Cowie, B. (1976): The Cardiac Patients Perception Of His Heart Attack. *Social Science and Medicine, Vol. 10.* 87-96.

Croog, S.H., Shapiro, D.S. & Levine, S. (1971): Denial Among Hearth Patients: An Empirical Study. *Psychosomatic Medicine, Vol. 33.* 385-397.

Croog, S.H. & Richards, N.P. (1977): Health Beliefs and Smoking Patterns In Heart Patients and Their Wives: A Longitudinal Study. *American Journal of Public Health, Vol. 67* (Oct.). 921-930.

Cunningham, A.J., Lockwood, G.A. & Edmonds, C.V.I. (1993): Which Cancer Patients Benefit Most From A Brief Group Coping Skills Program. *International Journal of Psychiatry In Medicine, Vol. 23* (4). 383-398.

Dauber, T.R. (1980): *The Framingham Study. The Epidemology of Atherosclerotic Disease.* Cambridge, Massachusetts, Harvard International Press.

Deenen, Th.A.M. & Klip, E.C. (1993): Coping With Asthma. *Respitatory Medicine, Vol. 87.* Supplement B. 67-70.

Denollet, J. (1991): Negative Affectivity and Repressive Coping: Pervasive Influence On Self-Reported Mood, Health and Coronary - Prone Behaviour. *Psychosomatic Medicine, Vol. 53.* 538-556.

Denollet, J. & de Potter, B. (1992): Coping Subtypes For Men With Coronary Heart Disease: Relationship To Well-Being, Stress and Type A - Behaviour. *Psychological Medicine, Vol. 22.* 667-684.

Derogatis L.R., Abeloff, M.D. & Melisaratos, N. (1979): Psychological Coping Mechanisms and Survival Time In Metastatic Breast Cancer. *Journal of the American Medical Association. Vol. 242* (14). 1504-1508.

DuCette, J. & Keane, A. (1984): "Why Me?": An Attributional Analysis Of A Major Illness. *Research in Nursing and Health, Vol.7*. 257-264.

Dunkel-Schetter, C., Feinstein, L.G., Taylor, S.E. & Falke, R.L. (1992): Patterns Of Coping With Cancer. *Health Psychology, Vol. 11* (2). 79-87.

Earll, L. & Johnston, M. (1994): *Illness Representations and Coping In Multiple Sclerosis.* Presented At The 1994 Annual Conference Of The British Psychology Society, Special Group In Health Psychology.

Ell, K. & Haywood, L.J. (1985): Social Support and Recovery From Myocardial Infarction: A Panel Study. *Journal of Social Service Research, Vol 7* (4). 1-17.

Faller, H. (1990): Coping With Myocardial Infarction: A Cognitive-Emotional Prospective. *Psychotherapy and Psychosomatics, Vol. 54*, 8-17.

Fawzy, F.I., Cousins, N., Fawzy, N.W., Kemeny, M.E., Elashoff, R. and Morton, D. (1990): A Structured Psychiatric Intervention For Cancer Patients. *Archives General Psychiatry, Vol. 47* (August). 720-725.

Feifel, H., Strack, S. & Nagy, V.T. (1987a): Degree Of Life-Threat and Differential Use Of Coping Modes. *Journal of Psychosomatic Research, Vol. 31* (1). 91-99.

Feifel, H., Strack, S. & Nagy, V.T. (1987b): Coping Strategies and Associated Features of Medically Ill Patients. *Psychosomatic Medicine, Vol. 49*. 616-625.

Felton, B.J. & Revenson, T.A. (1984): Coping With Chronic Illness: A Study Of Illness Controllability and The Influence of Coping Strategies On Psychological Adjustment. *Journal of Counsulting and Clinical Psycholoy, Vol. 52* (3). 343-353.

Felton, B.J., Revenson, T.A. & Hinrichsen, G.A. (1984): Stress And Coping In The Explanation Of Psychological Adjustment Among Chronically Ill Adults. *Social Science and Medicine, Vol. 18* (10). 889-898.

Fielding, R. (1987): Patients Beliefs Regarding The Causes Of Myocardial Infarction: Implications For Information Giving and Compliance, Patient Education and Counselling, Vol. 9. 121-134.

Folkman, S. (1984): Personal Control and Stress and Coping Processes: A theoretical Analysis. *Journal of Personality and Social Psychology, Vol. 46*. 839-852.

Folkman, S. & Lazarus, R.S. (1980): An Analysis of Coping In A Middle Aged Community Sample. *Journal of Health and Social Behaviour, Vol. 21*. 219-239

Folkman, S. & Lazarus, R.S. (1985): If It Changes It Must Be A Process: Study Of Emotion And Coping During Three Stages Of A College Examintation. *Journal of Personality and Social Psychology, Vol. 48* (1). 150-170.

Folkman, S., Lazarus, R.S., Schelter, C.D., Delongis, A. & Green, R.J. (1986): Dynamics of a Stressful Encounter: Cognitive Appraisal, Coping and Encounter Outcomes. *Journal of Personality and Social Psychology, Vol. 50* (5). 992-1003.

Folkman, S., Lazarus, R.S., Gruen, R.J. & DeLongis, A. (1986): Appraisal, Coping, Health Status and Psychological Symptoms. *Journal of Personality and Social Psychology, Vol. 50* (3). 571-579.

Folkman, S., Chesney, M., Pollack, L. & Coates, T. (1993): Stress, Control, Coping and Depressive Mood In Human Immunodeficiency Virus - Positive and - Negative Gay Men In San Francisco. *The Journal of Nervous and Mental Disease, Vol. 181* (7). 409-416.

Follette, V.M. & Jacobson, N.S. (1987): Importance of Attributions As A Predictor Of How People Cope With Failure. *Journal of Personality and Social Psychology, Vol. 52*, (6). 1205-1211.

Frank, R.G., Umlauf, R.L., Wonderlich, S.A., Askanazi, G.S., Buckelew, S.P. & Elliott, T.R. (1987): Differences In Coping Styles Among Persons With Spinal Cord Injury: A Cluster - Analytic Approach. *Journal of Consulting and Clinical Psychology, Vol. 55* (5). 727-731.

Frasure-Smith, N. & Prince, R. (1987): The Ischemic Heart Disease Life Stress Monitoring Program: Possible Theurapeutic Mechanisms. *Psychology and Health, Vol. 1* (3). 273-285.

Frey, D., Rogner, D., Schuler, M. & Korte, C. (1985): Psychological Determinants In The Convalescence Of Accident Patients. *Basic and Applied Social Psychology, Vol. 6* (4). 317-328.

Friedman, D.G., Dales, L.G. & Ury, H.K. (1979): Mortality In Middle Aged Smokers and Non-Smokers. *New England Journal of Medicine, Vol 300.* 213-217.

Froese, A., Hackett, T.P., Cassem, N.H. & Silverberg, E.I. (1974): Trajectorries Of Anxiety and Depression In Denying and Non-Denying Acute Myocardial Infarction Patients During Hospitalization. *Journal of Psychosomatic Research. Vol. 18.* 413-420.

Garcia, L., Valdes, M., Jodar, I., Riesco, N. & de Flores, T. (1994): Psychological Factors and Vulnerability To Psychiatric Morbidity After Myocardial Infarction. *Psychotherapy and Psychosomatics, Vol. 61.* 187-194.

Gil, K.M., Abrams, M.R., Phillips, G. & Williams, D.A. (1992): Sickle Cell Disease Pain: 2. Predicting Health Care Use and Activity Level At 9-Month Follow-Up. *Journal of Consulting and Clinical Psychology, Vol. 60* (2). 267-273.

Goldman, N.I & Cook, E.F. (1984): The Decline In Ischamic Heart Disease Mortality Rates. *Annuals of Internal Medicine, Vol.101.* 825-836.

Grahn, G. (1993): "Learning To Cope" - An Intervention In Cancer Care. *Support Care In Cancer, Vo. 1.* 266-271.

Greer, S., Morris, T. & Pettingale, K.W. (1979): Psychological Responses to Breast Cancer: Effect On Outcome. *The Lancet. Vol. 13* (Oct.). 785-787.

Gunther, V., Mur, E., Kurz, M. & Meise, U. (1994): Stable Pattern of Stress Coping In Patients With Rheumatoid Arthritis. *Clinical and Experimental Rheumatology, Vol 12.* 35-43.

Haan, N. (1969): A Tripartite Model Of Ego Functioning: Values and Clinical Research Applications. *Journal of Nervous and Mental Disease, Vol. 148,* 14-30.

Hackett, T.P. (1985): Depression Following Myocardial Infarction. *Psychosomatics, Vol. 26* (11), 23-28.

Hackett, T.P. & Cassem, N.H. (1974): The Impact Of Myocardial Infarction. *Rhode Island Medical Journal, Vol. 57.* 327-331.

Harkapaa, K. (1991): Relationship Of Psychological Distress and Health Locus Of Control Beliefs With The Use Of Cognitive and Behavioral Coping Strategies In Low Back Pain Patients. *The Clinical Journal of Pain, Vol. 7.* 275-282.

Havik, O.E & Mæland, J.G. (1986): Dimensions Of Verbal Denial In Myocardial Infarction. *Scandinavian Journal of Psychology, Vol. 27.* 326-339.

Havik, O.E. & Mæland, J.G. (1988): Verbal Denial and Outcome In Myocardial Infarction Patients. *Journal of Psychosomatic Research, Vol. 32* (2). 145-157.

Heider, F. (1958): *The Psychology of Interpersonal Relations*. New York, Wiley.

Heim, E., Augustiny, K.F., Schaffner, L. & Valach, L. (1993): Coping With Breast Cancer Over Time and Situation. *Journal of Psychosomatic Research, Vol. 37* (5). 523-542.

Holmes, J.A. & Stevenson, C.A.Z. (1990): Differential Effects Of Avoidant and Attentional Coping Strategies On Adaptation To Chronic and Recent-Onset Pain. *Health Psychology, Vol. 9* (5). 577-584.

Janoff-Bulman, R. (1979): Characterological Versus Behavioural Self-Blame: Inquiries Into Depression and Rape. *Journal of Personality and Social Psychology, Vol. 37.* 1798-1809.

Janoff-Bulman, R. & Wortman, C.B. (1977): Attributions Of Blame and Coping In The "Real World": Severe Accident Victims React To Their Lot. *Journal of Personality and Social Psychology, Vol. 35.* 351-363.

Jahanshahi, M. (1991): Psychosocial Factors and Depression In Torticollis. *Journal of Psychosomatic Research, Vol. 35* (4/5). 439-537.

Jalowiec, A., Murphy, S.P. & Powers, M.J. (1984): Psychometric Assessment Of The Jalowiec Coping Scale. *Nursing Research, Vol. 33.* 157-161.

Jowett, N.I. & Thompson, D.R. (1989): *Comprehensive Coronary Care.* Middlesex, Scutari Press.

Kaloupek, D.G. & Stoupakis, T. (1985): Coping With A Stressful Medical Procedure Further Investigation With Volunteer Blood Donors. *Journal of Behavioral Medicine, Vol. 8* (2). 131-148.

Kaufmann, M.W., Pasacreta, J., Cheney, R. & Arcuni, O. (1985-86): Psychosomatic Aspects Of Myocardial Infarction and Implications For Treatment. *International Journal of Psychiatry in Medicine, Vol. 15* (4), 371-380.

Kelley, H.H. (1967): Attribution Theory In Social Psychology. In Levin, D. (ed): *Nebraska Symposium On Motivation, Vol 15*, 192-238. Lincoln, University of Nebraska Press.

Kiecolt-Glaser, J.K. & Williams, D.A. (1987): Self-Blame, Compliance and Distress Among Burn Patients. *Journal of Personality and Social Psychology, Vol. 53* (1). 187-193.

Koslowsky, M., Croog, S.H. & La Voie, L. (1978): Perception Of The Aetiology Of Illness: Causal Attributions In A Heart Patient Population. *Perceptual and Motor Skills, Vol. 47*. 475-485.

Krantz, D.S. & Deckel, A.W. (1983): Coping With Coronary Heart Disease and Stroke. In: Burish, T.G. & Bradley L.A.: *Coping With Chronic Disease*, London, Academic Press Inc.

Kroode, H.T., Oosterwijk, M. & Steverink, N. (1989): Three Conflicts As A Result Of Causal Attributions. *Social Science and Medicine, Vol. 28* (1). 93-97.

Langosch, W. (1989): Cardiac Rehabilitation. In: Pearce, S. & Wardle, J. (eds): *The Practice Of Behavioural Medicine.* BPS Books, Oxford, Oxford University Press.

Lazarus, R.S. (1993a): Coping Theory and Research: Past, Present and Future. *Psychosomatic Medicine Vol. 55,* 234-247.

Lazarus, R.S. (1993b): From Psychological Stress To The Emotions: A History Of Changing Outlooks. *Annual Review of Psychology, Vol. 44*, 1-21.

Lazarus, R.S. & Folkman, S. (1984): Coping and Adaptation. In: Gentry, W. (ed). *Handbook of Behavioural Medicine*. London, Guilford.

Lerner, M.J. (1965): Evaluation Of Performance As A Function Of Performer's Reward and Attractiveness. *Journal of Personality and Social Psychology, Vol. 1*. 355-360.

Lerner, M.J. & Matthews, G. (1967): Reactions To Suffering Of Others Under Conditions Of Indirect Responsibility. *Journal of Personality and Social Psychology, Vol. 5.* 319-325.

Lerner, M. & Remen, R.N. (1987): Tradecraft Of The Commonweal Cancer Help Program. *Advances, Vol. 4* (3).

Levenson, J.L., Mishra, A., Hamer, R.M. & Hastillo, A. (1989): Denial and Medical Outcome In Unstable Angina. *Psychosomatic Medicine, Vol. 51.* 27-35.

Leventhal H. & Nerenz, D.R. & Steele, D.J. (1984): Illness Representations and Coping With Health Threats. In: Baum, E., Taylor, S.E. & Singer, J.E. (Eds). *Handbook of Psychology and Health*, Vol. IV, New York, Hillsdale, Laurence Erlbaum Associates, 219-251.

Leventhal H. & Nerenz, D.R. (1985): The Assessment of Illness Cognition. In: Karoly, P. (ed). *Measurement Strategies in Health Psychology.* Canada, John Wiley & Sons, Inc. 517-554.

Linn, M.W., Linn, B.S. & Stein, S.R. (1982): Beliefs About Causes Of Cancer Patients. *Journal of Behavioural Medicine, Vol.16.* 835-839.

Major, B., Mueller, P. & Hildebrandt, K. (1985): Attrributions, Expectations and Coping With Abortion. *Journal of Personality and Social Psychology, Vol. 48*, (3). 585-599.

Mann, S. & Zautra, A. (1989): Spouse Criticism and Support: Their Association With Coping and Psychological Adjustment Among Women With Rheumatoid Arthritis. *Journal of Personality and Social Psychology, Vol. 56.* 608-617.

Martin, P. & Lee, H.S. (1992): Indicators Of Active and Passive Coping In Myocardial Infarction Victims. *Journal of Gerontology, Vol. 47* (4). 238-241.

Mayou, R., Williamson, B. & Foster, A. (1978): Outcome Two Months After Myocardial Infarction. *Journal of Psychosomatic Research, Vol. 22,* 439-445.

McCrae, R.R. (1984): Situational Determinants Of Coping Responses: Loss, Threat and Challange. *Journal of Personality and Social Psychology, Vol. 46 (4).* 919-928.

McCracken, L.M., Zayfert, C., Gross, R.T. (1992): The Pain Anxiety Symptom Scale: Development And Validation Of A Scale To Measure Fear Of Pain. *Pain, Vol. 50.* 67-73.

McCracken, L.M. & Gross, R.T. (1993): Does Anxiety Affect Coping With Chronic Pain? *The Clinical Journal of Pain, Vol. 9.* 253-259.

Meyer, R. (1983): Adaptation To A Myocardial Infarction From A Developmental Perspective. *Rehabilitation Counseling Bulletin, May.* 360-363.

Meyer, D., Leventhal, H. & Gutmann, M. (1985): Common-Sense Models of Illness: The Example of Hypertension. *Health Psychology, Vol. 4* (2), 115-135.

Meyer, B. & Taylor S.E. (1986): Adjustment To Rape. *Journal of Personality and Social Psychology, Vol. 50.* 1226-1234.

Montgomery, D.C. (1984): *Design and Analysis of Experiments* (2nd edition). New York, John Wiley & Sons.

Mueller, P. & Major B. (1989): Self-Blame, Self Efficacy and Adjustment To Abortion. *Journal of Personality and Social Psychology, Vol. 57,* (6). 1059-1068.

Murphy, L.R. (1985): Individual Coping Strategies. In: Cooper, C.L. & Smith, M.J. (eds). *Job Stress and Blue Collar Work.* New York, John Wiley & Sons Ltd.

Mullen ,B. & Suls, J. (1982): The Effectiveness Of Attention And Rejection As Coping Styles: A Meta - Analysis Of Temporal Differences. *Journal of Psychosomatic Research, Vol. 26* (1). 43-49.

Mumma, C. & Corkle, R.MC. (1982-83): Causal Attributions And Life-Threatening Disease. *International Journal Of Psychiatry In Medicine, Vol. 12* (4). 311-319.

Naea de Valle, M. & Norman, P. (1992): Causal Attributions, Health Locus Of Control Beliefs and Lifestyle Changes Among Pre-Operative Coronary Patients. *Psychology and Health, Vol. 7.* 201-211.

Newman, S.P. (1990): Coping With Chronic Illness. In. Bennett, P, Weinman, J. & Saurgeon, P. *Current Developments in Health Psychology.* London, Herwood Academic Publishers.

Newman, S.P., Fitzpatrick R., Lamb, R. & Shipley M. (1990): Patterns of Coping In Rheumatoid Arthitis. *Psychology and Health, Vol. 4.* 187-200.

Newman, S.P. & Revenson, T.A. (1993): Coping With Rheumatoid Arthritis. *Baillieres Clinical Rheumatology, Vol. 7*, Part 2. 250-280.

Newman, S.P. (1993): Rheumatic Disease. *Annals of the Rheumatic Diseases, Vol. 52.* 553-554.

Nicassio, P.M., Radojevic, V., Weisman, M.H., Culbertson, A.L., Lewis, C. & Clemmey, P. (1993): The Role Of Helplessness In The Response To Disease Modifying Drugs In Rheumatoid Arthritis. *The Journal of Rheumatology, Vol. 20* (7). 1114-1120.

Nielson, W.R. & MacDonald, M.R. (1988): Attributes Of Blame And Coping Following Spinal Cord Injury: Is Self-Blame Adaptive? *Journal Of Social and Clinical Psychology, Vol. 7* (2/3). 163-175.

Nolan, R.P. & Wielgosz, A.T. (1991): Assessing Adaptive and Maladaptive Coping In The Early Phase Of Acute Myocardial Infarction. *Journal of Behavioural Medicine, Vol. 14* (2). 111-124.

Norman, P. (1991): Causal Beliefs For Coronary Heart Disease. Unpublished paper referred to with authors permission.

Norusis, M.J./SPSS Inc. (1990): SPSS/PC+ Advanced Statistics, TM 4.0 For The IBM PC/XT/AT and PS/2 Spss Inc, U.S.A.

Ostell, A. & Divers, P. (1987): Attributional Style, Unemployment And Mental Health. *Journal of Occupational Psychology, Vol. 60.* 333-337.

Pakenham, K.I., Dadds, M.R. & Terry, D.J. (1994): Relationships Between Adjustment To HIV And Both Social Support And Coping. *Journal of Counsulting and Clinical Psychology, Vol. 62* (6). 1194-1203.

Parker, J., MacRae, C., Smarr, K. et al. (1988): Coping Strategies In Rheumatoid Arthiritis. *Journal of Rheumatology, Vol. 15.* 1376-1383.

Parker, J.D.A. & Endler, N.S. (1992): Coping With Coping Assessment: A Critical Review. *European Journal of Personality, Vol. 6.* 321-344.

Parkes, K.R. (1984): Locus of Control, Cognitive Appraisal and Coping In Stressful Episodes. *Journal of Personality and Social Psychology, Vol. 46 (3).* 655-668.

Pettingale, K.W. (1984): Coping and Cancer Prognosis. *Journal of Psychosomatic Research. Vol. 28* (5). 363-364.

Poppleton, P. & Pilkington, G. (1963): The Measurement Of Religious Attitudes In A University Population. *British Journal of Social and Clinical Psychology, Vol. 2.* 20-36.

Revenson, T.A. & Felton, B.J. (1989): Disability and Coping As Predictors Of Psychological Adjustment To Rheumatoid Arthritis. *Journal of Counsulting and Clinical Psychology, Vol. 57* (3). 344-348.

Revenson, T.A., Schiaffino, K.M., Majerovitz S.D. & Gibofsky, A. (1991): Social Support As A Double-Edged Sword: The Relation Of Positive and Problematic Support To Depression Among Rheumatoid Arthritis Patients. *Social Science and Medicine, Vol. 33.* 807-813.

Rohde, P., Lewinsohn, P.M., Tilson, M. & Seeley, J.R. (1990): Dimensionality Of Coping and Its Relation To Depression. *Journal of Personality and Social Psychology, Vol. 58* (3). 499-511.

Rosenstiel, A.K. & Keefe, F.J. (1983): Use Of Coping Strategies In Chronic Low Back Pain Patients: Relationship To Patient Characteristics And Current Adjustment. *Pain, Vol. 17*. 33-44.

Rotter, J.B. (1966): Generalised Expectancies For Internal Versus External Control Of Reinforcement. *Psychological Monographs, Vol. 80* (609). 1-28.

Rubin, Z. & Peplau, L.A. (1975): Who Believes In A Just World? *Journal of Social Issues, Vol. 31*. 65-87.

Rudy, E.B. (1980): Patient's and Spouse's Causal Explanations Of A Myocardial Infarction. *Nursing Research, Vol. 29* (6). 352-356.

Scherck, K.A. (1992): Coping With Acute Myocardial Infarction. *Heart & Lung, Vol. 21 (*4). 327-334.

Schulz, R. & Decker, S. (1985): Long-Term Adjustment To Physical Disability: The Role Of Social Support, Perceived Control and Self-Blame. *Journal of Personality and Social Psychology, Vol. 48* (5). 1162-1172.

Schussler, G. (1992): Coping Strategies and Individual Meanings Of Illness. *Social Science and Medicine, Vol. 34* (4). 427-432.

Shaver, K.G. (1970): Defensive Attribution: Effects Of Severity and Relevance On The Responsibility Assigned For An Accident. *Journal of Personality and Social Psychology, Vol. 14*. 101-113.

Sherbourne, C.D., Hays, R.D., Ordway, L., DiMatteo, M.R. & Kravitz, R.I. (1991): Antecedents of Adherence To Medical Recommendations: Results From The Medical outcome Study. *Journal of Behavioural Medicine, Vol. 17* (4). 347-360.

Singer, J.E. (1984): Some Issues In The Study Of Coping. *Cancer,May* Supplement.

Smith C.A. & Wallston, K.A. (1992): Adaptation In Patients With Chronic Rheumatoid Arthritis: Application Of A General Model. *Health Psychology, Vol. 11* (3). 151-162.

Smith, L.W., Patterson, T.L. & Grant, I. (1990): Avoidant Coping Predicts Psychological Disturbance In The Elderly. *The Journal of Nervous and Mental Disease, Vol. 178* (8). 525-530.

Spiegel, D., Bloom, J.R., Kraemer, H.C. & Gotthal, E. (1989): Effect Of Psychological Treatment On Survival Of Patients With Metastatic Breast Cancer. *The Lancet,* (Oct.). 888-891.

Stanton, A.L. & Snider, P.R. (1993): Coping With A Breast Cancer Diagnosis: A Prospective Study. *Health Psychology, Vol. 12.* 16-23.

Stewart, M.W. & Knight, R.G. (1991): Coping Strategies and Affect In Rheumatoid and Psoriatic Arthritis. *Arthritis Care and Research, Vol 4* (3). 117-122.

Suls, J. & Fletcher, B. (1985): The Relative Efficacy Of Avoidant and Non-Avoidant Coping Strategies: A Meta-Analysis. *Health Psychology, Vol. 4* (3). 249-288.

Tabachnick, B.G. & Fidell, L.S. (1989): *Using Multivariate Statistics,* (second edition). New York, Harper Collins Publishers, Inc.

Taylor, S.E. (1983): Adjustment To Threatening Events: A Theory of Cognitive Adaptation. *American Psychologist, November.* 1163-1173.

Taylor, S.E., Lichtman, R.R. & Wood, J.V. (1984): Attributions, Beliefs About Control and Adjustment To Breast Cancer. *Journal of Personality and Social Psychology, Vol. 46* (3). 489-502.

Taylor, S. E. (1986): *Health Psychology.* Toronto, Random House, Inc.

Tennen, H., Affleck, G., Allen, D.A., McGrade, B.J. & Ratzan, S. (1984): Causal Attributions and Coping With Insulin - Dependent Diabetes. *Basic and Applied Social Psychology, Vol. 5.* 131-142.

Tennen, H., Affleck, G. & Gershman, K. (1986): Self-Blame Among Parents With Perinatal Complications: The Role Of Self-Protective Motives. *Journal of Personality and Social Psychology, Vol. 50* (4). 690-696.

Tennen, H. & Affleck, G. (1990): Blaming Others For Threatening Events. *Psychological Bulletin, Vol. 108* (2), 208-232.

Terry, D. (1992): Stress, Coping and Coping Resources As Correlates Of Adaptation In Myocardial Infarction Patients. *British Journal of Clinical Psychology, Vol. 31.* 215-225.

Thompson, R.J., Gil, K.M., Abrams, M.R. & Phillips, G. (1992): Stress Coping and Psychological Adjustment Of Adults With Sickle Cell Disease. *Journal of Consulting and Clinical Psychology, Vol. 60* (3). 433-440.

Timko, C. & Janoff-Bulman, R. (1985): Attributions, Vulnerability And Psychological Adjustment: The Case Of Breast Cancer. *Health Psychology, Vol. 4* (16). 521-544.

Turnquist, D.C., Harvey, J.H. & Andersen, B.L. (1988): Attributions and Adjustment To Life-Threatening Illness. *British Journal of Clinical Psychology, Vol. 27.* 55-65.

Valach, L., Augustiny, K.F., Dvorak, J., Fuhrimann, P., Blaser, A., Tschaggelar, W. & Heim, E. (1990): Self-Attributions Of Coping and Its Social Adaptability In Patients Operated For Lumber Disc Herniation. In: Schmidt, L.R., Schwenkmezger, P., Weinman, J. and Maes, S. (eds): *Theoretical And Applied Aspects Of Health Psychology.* London, Harwood Academic Publishers.

Valach, L. & Toscano, I. (1993): Coping In Low Back Pain: Stories and Daily Experience. In: Ernst, E., Jayson, M.I.V., Pope, M.H. & Porter, R.W.(eds): *Advances In Idiopathic Low Back Pain.* Wien, Blackwell - MZV. .

Vitaliano, P.P., Russo, J., Carr, J.E., Maiuro, R.D. & Becker, J. (1985): The Ways Of Coping Checklist: Revision And Psychometric Properties. *Multivariate Behavioural Research, Vol. 20.* 3-26.

Wallston, B.S. & Wallston, K.A. (1978): Locus Of Control And Health: A Review Of The Literature. *Health Education Monographs, Vol. 6.* 107-117.

Wallston, K.A. & Wallston, B.S. (1981): Health Locus Of Control Scales. In Lefrout, H. (ed): *Research With The Locus of Control Construct, Vol. 1.* New York, Academic Press.

Warrenburgh, S., Levine, J., Schwartz, G.E., Fontana, A.F., Kerns, R.D., Delaney, R. & Mattson, R. (1989): Defensive Coping and Blood Pressure Reactivity In Medical Patients. *Journal of Behavioral Medicine, Vol. 12* (5). 407-424.

Watson, D. & Kendall, P.C. (1983): Methodological Issues In Research In Coping With Chronic Disease. In: Burish, T.G. & Bradley, L.A. (eds). *Coping With Chronic Disease.* London, Academic Press, Inc.

Weickgenant, A.L., Slater, M.A., Patterson, T.L., Atkinson, J.H., Grant, I. & Garfin, S.R. (1993): Coping Activities In Chronic Low Back Pain: Relationship With Depression. *Pain, Vol. 52.* 95-103.

Weiner, B.A. (1979): A Theory Of Motivation For Some Classroom Experiences. *Journal of Educational Psychology, Vol. 71.* 3-25.

Weiner, B.A., Frieze, I., Kukla, A., Reed, L., Rest, S. & Rosenbaum, R. (1971): *Perceiving The Causes Of Success and Failure.* New York. General Learning Press.

Weinman, J. (1994): *Making Sense Of Symptoms and Illness*. A Talk Presented At The School of Psychology, University of St. Andrews, November 4th.

Witenberg, S.H., Blanchard, E.B., Suls, J., Tennen, H., Meloy, G. & McGoldrick, D. (1983): Perceptions Of Control And Causality As Predictors Of Compliance And Coping In Hemodialysis. *Basic And Applied Social Psychology, Vol. 4* (4). 319-336.

Wong, P.T.P. & Weiner, B. (1981): When People Ask Why Questions, and The Heuristics Of Atttributional Research. *Journal of Personality and Social Psychology, Vol. 40*. 650-663.

Zautra, A.J. & Manne, S.L. (1992): Coping With Rheumatoid Arthritis: A Review Of A Decade Of Research. *Annual Behavioural Medicine, Vol. 14* (1). 31-39.

Zigmond, A.S. & Snaith, R.P. (1983): The Hospital Anxiety and Depression Scale. *Acta Psychiatry Scandinavia., Vol. 67*. 361-370.

APPENDIX I

Introduction To The Study
&
Patient Information Sheet

Introduction to the study.

I wonder if I could tell you about a study we are doing here at the hospital. We are doing the study because we want to give the best possible care to people who have had a heart attack.

Now there are three possible ways in which we can give advice and support. We are reasonably confident that the advice we give here now, as it stands, it good, but we are trying to find the best time to target the advice. So what we want to do is try three different ways of giving information to people.

One way is the standard advice that you would receive here, and everyone entering the study will still get the standard care.

A second possibility is that perhaps it would be beneficial to receive additional advice and support whilst in hospital. So the second group would get the standard care plus additional counselling from the Cardiac Recovery Sister.

A third possibility is that people may benefit from support after they go home. So the third group would receive standard care plus support from the Recovery Sister in hospital and after they go home. She would see them weekly for up to six weeks after they go home.

As I say, we do not know which of these methods is best for people and this study will hopefully give us that information. We are also interested in the effects of the heart attack on your partner - so they would be included in the study and also receive the advice and support.

People who enter the study will be asked to answer some questions whilst they are in the hospital and will also be seen at home 3 times - after 2 months, 6 months and 1 year, so I will follow you up to see how you are getting on.

The information you give will be completely confidential and I would not divulge it to anybody else.

First of all we are asking people if they are prepared to agree to be in any of the three groups. If you are prepared to participate in the study the decision about which group you will be in will be made at random - that means that the recovery sister will open an envelope to see which group you will be in. I would not know which group it will be as I will be following you up. The choice will be decided when you enter the study.

You don't have to take part in the study and if you don't take part you will receive the standard care.

I have a summary written down here that you can keep.

Do you think it is something you would like to take part in?

Do you have any questions that I could answer?

(Joan Foulkes, 1991).

Patient Information Sheet.

You, or your partner, has recently suffered a heart attack, and you may have several questions about how this could affect you. The staff are involved in a study which is designed to compare the different methods of giving information and advice.

Before deciding to participate in this study you should have read, or have read to you, this information sheet and consider it carefully. Any questions that you may have will be answered by the research nurse.

Purpose of the study.

The purpose of the study is to evaluate the effects of information and counselling, provided for patients and their partners following a heart attack. If you agree to participate you and your partner will be allocated at random into one of three groups.

1 The first group will receive standard rehabilitation advice as currently practised.

2. The second group will be followed up in the ward by the nurse counsellor and also received information and counselling from her. The program will have a standard care but the content and timing of the sessions will, as far as possible, be tailored to your individual needs.

3. The third group will receive follow up by the nurse counsellor, both in hospital and on an out-patient basis for up to 2 months. This may necessitate out-patient visits to the hospital and/or home visits by the nurse counsellor, but this will be negotiated on an individual basis.

If you agree to participate, the effects of the package will be assessed by interview/questionnaire at a 2 month, 6 month and 1 year period.

Consent and Withdrawal.

You may refuse consent to participate or withdraw from this study at any time without prejudice to your care and you are not obliged to state your reasons.

Confidentiality.

Your confidentiality will be maintained at all times. Names will not be used in any publications which may arise from this study.

(Joan Foulkes, 1991)

APPENDIX II

Consent Form

Consent Form.

Cardiac Recovery Study.

I have read (have had read) the description of the study and fully understand what this study will involve. I agree to participate in this study on the understanding that my refusal to be included in this study will not affect my treatment in any way and that I may withdraw from the study at any time without prejudice.

_____ _____

Patient's signature date

_____

Patient's name (printed)

_____ _____

Partner's signature date

_____

Partner's name (printed)

_____ _____

Witness's signature date

_____

Witness's name (printed)

APPENDIX III

Follow-up Letter

Mr or Mrs X
00 Something Road
Scotland

Dear X,

Cardiac Recovery Study

Thank you for your support with the above study. I will telephone you shortly in order to arrange a suitable time to visit and complete the next follow up interview.

We are grateful for your continued support and appreciate you giving your time to help with our research.

Yours sincerely

Hafrún Guðmundsdóttir

APPENDIX IV

Questionnaires
(Cope, Cause & HAD)

COPE (as used at discharge and at 2 mth follow up).

Now we are wanting to know how you are coping with your heart attack (at this point in time), the particular situation you are in now. We will go through this list with your heart attack in mind. You can respond by saying either:

1 = I don't do this at all **3 = I do this a medium amount.**
2 = I do this a little bit **4 = I do this a lot**

1. I try to grow as a person as a result of the experience.	1 2 3 4
2. I turn to work or other substitute activities to take my mind off things.	1 2 3 4
3. I get upset and let my emotions out.	1 2 3 4
4. I try to get advice from someone about what to do.	1 2 3 4
5. I concentrate my efforts on doing something about it.	1 2 3 4
6. I say to myself "this isn't real."	1 2 3 4
7. I put my trust in God.	1 2 3 4
8. I laugh about the situation.	1 2 3 4
9. I admit to myself that I can't deal with it, and quit trying.	1 2 3 4
10. I restrain myself from doing anything too quickly.	1 2 3 4
11. I discuss my feelings with someone.	1 2 3 4
12. I use alcohol or drugs to make myself feel better.	1 2 3 4
13. I get used to the idea that it happened.	1 2 3 4
14. I talk to someone to find out more about the situation.	1 2 3 4
15. I keep myself from getting distracted by other thoughts or activities.	1 2 3 4
16. I daydream about things other than this.	1 2 3 4
17. I get upset, and am really aware of it.	1 2 3 4
18. I seek God's help.	1 2 3 4
19. I make a plan of action.	1 2 3 4
20. I make jokes about it.	1 2 3 4
21. I accept that this has happened and that it can't be changed.	1 2 3 4
22. I hold off doing anything about it until the situation permits.	1 2 3 4
23. I try to get emotional support from friends or relatives.	1 2 3 4
24. I just give up trying to reach my goal.	1 2 3 4
25. I take additional action to try to get rid of the problem.	1 2 3 4
26. I try to lose myself for a while by drinking alcohol or taking drugs.	1 2 3 4
27. I refuse to believe that it has happened.	1 2 3 4
28. I let my feeling out.	1 2 3 4
29. I try to see it in a different light, to make it seem more positive.	1 2 3 4
30. I talk to someone who could do something concrete about the problem.	1 2 3 4

1 = I don't do this <u>at all.</u> **3 = I do this a <u>medium amount.</u>**
2 = I do this <u>a little bit.</u> **4 = I do this <u>a lot.</u>**

31. I sleep more than usual.	1 2 3 4
32. I try to come up with a strategy about what to do.	1 2 3 4
33. I focus on dealing with this problem, and if necessary let other things slide a little.	1 2 3 4
34. I get sympathy and understanding from someone.	1 2 3 4
35. I drink alcohol or take drugs, in order to think about it less.	1 2 3 4
36. I kid around about it.	1 2 3 4
37. I give up the attempt to get what I want.	1 2 3 4
38. I look for something good in what is happening.	1 2 3 4
39. I think about how I might best handle the problem.	1 2 3 4
40. I pretend that it hasn't really happened.	1 2 3 4
41. I make sure not to make matters worse by acting too soon.	1 2 3 4
42. I try hard to prevent other things from interfering with my efforts at dealing with this.	1 2 3 4
43. I go to movies or watch TV, to think about it less.	1 2 3 4
44. I accept the reality of the fact that it happened.	1 2 3 4
45. I ask people who have had similar experiences what they did.	1 2 3 4
46. I feel a lot of emotional distress and find myself expressing those feelings a lot.	1 2 3 4
47. I take direct action to get around the problem.	1 2 3 4
48. I try to find comfort in my religion.	1 2 3 4
49. I force myself to wait for the right time to do something.	1 2 3 4
50. I make fun of the situation.	1 2 3 4
51. I reduce the amount of effort I'm putting into solving the problem.	1 2 3 4
52. I talk to someone about how I feel.	1 2 3 4
53. I use alcohol or drugs to help me get through it.	1 2 3 4
54. I learn to live with it.	1 2 3 4
55. I put aside other activities in order to concentrate on this.	1 2 3 4
56. I think hard about what steps to take.	1 2 3 4
57. I act as though it hasn't even happened.	1 2 3 4
58. I do what has to be done, one step at a time.	1 2 3 4
59. I learn something from the experience.	1 2 3 4
60. I pray more than usual.	1 2 3 4

COPE (at 12 mth follow up).

We are interested in seeing how you are coping with your heart attack **now** and also **looking back over the year how you coped** with it. In this case we will go over the questions with those two things in mind, i.e., how you are coping with the heart attack **now** and also **looking back over the whole year** how you coped.

1 = I don't (didn't) do this at all. 3 = I do (did) this a medium amount.
2 = I do (did) this a little bit. 4 = I do (did) this a lot.

	Now	The year
1. I try to grow as a person as a result of the experience	1 2 3 4	1 2 3 4
2. I turn to work or other substitute activities to take my mind off things.	1 2 3 4	1 2 3 4
3. I get upset and let my emotions out.	1 2 3 4	1 2 3 4
4. I try to get advice from someone about what to do.	1 2 3 4	1 2 3 4
5. I concentrate my efforts on doing something about it.	1 2 3 4	1 2 3 4
6. I say to myself "this isn't real."	1 2 3 4	1 2 3 4
7. I put my trust in God.	1 2 3 4	1 2 3 4
8. I laugh about the situation.	1 2 3 4	1 2 3 4
9. I admit to myself that I can't deal with it, and quit trying.	1 2 3 4	1 2 3 4
10. I restrain myself from doing anything too quickly.	1 2 3 4	1 2 3 4
11. I discuss my feelings with someone.	1 2 3 4	1 2 3 4
12. I use alcohol or drugs to make myself feel better.	1 2 3 4	1 2 3 4
13. I get used to the idea that it happened.	1 2 3 4	1 2 3 4
14. I talk to someone to find out more about the situation.	1 2 3 4	1 2 3 4
15. I keep myself from getting distracted by other thoughts or activities.	1 2 3 4	1 2 3 4
16. I daydream about things other than this.	1 2 3 4	1 2 3 4
17. I get upset, and am really aware of it.	1 2 3 4	1 2 3 4
18. I seek God's help.	1 2 3 4	1 2 3 4
19. I make a plan of action.	1 2 3 4	1 2 3 4
20. I make jokes about it.	1 2 3 4	1 2 3 4
21. I accept that this has happened and that it can't be changed.	1 2 3 4	1 2 3 4
22. I hold off doing anything about it until the situation permits	1 2 3 4	1 2 3 4
23. I try to get emotional support from friends or relatives.	1 2 3 4	1 2 3 4
24. I just give up trying to reach my goal.	1 2 3 4	1 2 3 4
25. I take additional action to try to get rid of the problem.	1 2 3 4	1 2 3 4
26. I try to lose myself for a while by drinking alcohol or taking drugs.	1 2 3 4	1 2 3 4
27. I refuse to believe that it has happened.	1 2 3 4	1 2 3 4
28. I let my feeling out.	1 2 3 4	1 2 3 4
29. I try to see it in a different light, to make it seem more positive.	1 2 3 4	1 2 3 4

1 = I don't (didn't) do this at all. 3 = I do (did) this a medium amount.
2 = I do (did) this a little bit. 4 = I do (did) this a lot.

	Now	The Year
30. I talk to someone who could do something concrete about the problem.	1 2 3 4	1 2 3 4
31. I sleep more than usual.	1 2 3 4	1 2 3 4
32. I try to come up with a strategy about what to do.	1 2 3 4	1 2 3 4
33. I focus on dealing with this problem, and if necessary let other things slide a little.	1 2 3 4	1 2 3 4
34. I get sympathy and understanding from someone.	1 2 3 4	1 2 3 4
35. I drink alcohol or take drugs, in order to think about it less.	1 2 3 4	1 2 3 4
36. I kid around about it.	1 2 3 4	1 2 3 4
37. I give up the attempt to get what I want.	1 2 3 4	1 2 3 4
38. I look for something good in what is happening.	1 2 3 4	1 2 3 4
39. I think about how I might best handle the problem.	1 2 3 4	1 2 3 4
40. I pretend that it hasn't really happened.	1 2 3 4	1 2 3 4
41. I make sure not to make matters worse by acting too soon.	1 2 3 4	1 2 3 4
42. I try hard to prevent other things from interfering with my efforts at dealing with this.	1 2 3 4	1 2 3 4
43. I go to movies or watch TV, to think about it less.	1 2 3 4	1 2 3 4
44. I accept the reality of the fact that it happened.	1 2 3 4	1 2 3 4
45. I ask people who have had similar experiences what they did.	1 2 3 4	1 2 3 4
46. I feel a lot of emotional distress and find myself expressing those feelings a lot.	1 2 3 4	1 2 3 4
47. I take direct action to get around the problem.	1 2 3 4	1 2 3 4
48. I try to find comfort in my religion.	1 2 3 4	1 2 3 4
49. I force myself to wait for the right time to do something.	1 2 3 4	1 2 3 4
50. I make fun of the situation.	1 2 3 4	1 2 3 4
51. I reduce the amount of effort I'm putting into solving the problem.	1 2 3 4	1 2 3 4
52. I talk to someone about how I feel.	1 2 3 4	1 2 3 4
53. I use alcohol or drugs to help me get through it.	1 2 3 4	1 2 3 4
54. I learn to live with it.	1 2 3 4	1 2 3 4
55. I put aside other activities in order to concentrate on this.	1 2 3 4	1 2 3 4
56. I think hard about what steps to take.	1 2 3 4	1 2 3 4
57. I act as though it hasn't even happened.	1 2 3 4	1 2 3 4
58. I do what has to be done, one step at a time.	1 2 3 4	1 2 3 4
59. I learn something from the experience.	1 2 3 4	1 2 3 4
60. I pray more than usual.	1 2 3 4	1 2 3 4

COPE (30 items).

We are also interested in seeing how you usually cope with other difficult or stressful situations in your life. The response format is the same as before but this time you tell me how you usually cope.

1 = I usually don't do this at all. 3 = I usually do this a medium amount.
2 = I usually do this a little bit. 4 = I usually do this a lot.

1. I turn to work or other substitute activities to take my mind off things. 1 2 3 4
2. I concentrate my efforts on doing something about it. 1 2 3 4
3. I say to myself "this isn't real." 1 2 3 4
4. I put my trust in God. 1 2 3 4
5. I laugh about the situation. 1 2 3 4
6. I discuss my feelings with someone. 1 2 3 4
7. I talk to someone to find out more about the situation. 1 2 3 4
8. I daydream about things other than this. 1 2 3 4
9. I get upset, and am really aware of it. 1 2 3 4
10. I seek God's help. 1 2 3 4
11. I make jokes about it. 1 2 3 4

12. I accept that this has happened and that it can't be changed. 1 2 3 4
13. I hold off doing anything about it until the situation permits. 1 2 3 4
14. I let my feeling out. 1 2 3 4
15. I try to see it in a different light, to make it seem more positive. 1 2 3 4
16. I talk to someone who could do something concrete about the problem. 1 2 3 4
17. I try to come up with a strategy about what to do. 1 2 3 4
18. I focus on dealing with this problem, and if necessary let other things slide a little. 1 2 3 4
19. I drink alcohol or take drugs, in order to think about it less. 1 2 3 4
20. I give up the attempt to get what I want. 1 2 3 4
21. I pretend that it hasn't really happened. 1 2 3 4

22. I make sure not to make matters worse by acting too soon. 1 2 3 4
23. I try hard to prevent other things from interfering with my efforts at dealing with this. 1 2 3 4
24. I accept the reality of the fact that it happened. 1 2 3 4
25. I reduce the amount of effort I'm putting into solving the problem. 1 2 3 4
26. I talk to someone about how I feel. 1 2 3 4
27. I use alcohol or drugs to help me get through it. 1 2 3 4
28. I think hard about what steps to take. 1 2 3 4
29. I do what has to be done, one step at a time. 1 2 3 4
30. I learn something from the experience. 1 2 3 4

CAUSE

(The causal attribution questionnaire as it was presented at discharge data collection point).

1. I wonder if you could tell me, when you think about your illness what do you think about?

2. Many people who have had a heart attack, develop some sort of ideas about how they got it. In other words, even though we don't know all the causes of a heart attack, most people have some ideas or theory about why they have it. I wonder what kind of ideas you have had?

3. Which one of the following do you think may have caused your heart attack? (The examiner reads out each item and the response format).

1. Myself	No	Might have	Yes
2. Other people	No	Might have	Yes
3. Stress	No	Might have	Yes
4. Worry	No	Might have	Yes
5. Eating fatty foods	No	Might have	Yes
6. Type of work that I do/did	No	Might have	Yes
7. Overwork	No	Might have	Yes
8. Working too hard	No	Might have	Yes
9. High levels of cholesterol	No	Might have	Yes
10. It is in my family	No	Might have	Yes
11. Stress at work	No	Might have	Yes
12. Smoking	No	Might have	Yes
13. Being overweight	No	Might have	Yes

14. By chance	No	Might have	Yes
15. Fate	No	Might have	Yes
16. High blood pressure	No	Might have	Yes
17. Poor diet	No	Might have	Yes
18. Environmental factors	No	Might have	Yes
19. Nerves	No	Might have	Yes
20. Arguing with people	No	Might have	Yes
21. Over exertion or sudden exercise	No	Might have	Yes
22. Lack of exercise	No	Might have	Yes
23. Driving or being caught up in heavy traffic	No	Might have	Yes
24. Depression	No	Might have	Yes
25. Drinking excessive amounts of alcohol	No	Might have	Yes
26. By the way other people treat me.	No	Might have	Yes
27. Listening to other people's problems	No	Might have	Yes
28. Punishment for doing wrong	No	Might have	Yes
29. Payment for sins	No	Might have	Yes
30. Bad luck	No	Might have	Yes
31. The kind of person I am	No	Might have	Yes
32. Will of God	No	Might have	Yes
33. Problems with my children	No	Might have	Yes
34. Problems with my spouse	No	Might have	Yes

4. Is there anything else that you would like to add to this list that you think might have caused your heart attack?

Yes No

If Yes, what?_____

_____

_____

5. Now lets look at the causes you have said yes to and pick out the ones you think are the most important. Please, pick out the 3 most important causes of your heart attack. Order them, the one you think is the most important first, the second most important next and so on.

1._____
2._____
3._____

6. Do you think these things have gone together to cause your illness or do you think that one has led to another, that one cause may have caused another?

_____

_____

_____

CAUSE

(The causal attribution questionnaire as it was presented at 2, 6 and 12 months follow up).

1. I wonder if you could tell me, when you think about your illness what do you think about?

2. Many people who have had a heart attack, develop some sort of ideas about how they got it. In other words, even though we don't know all the causes of a heart attack, most people have some ideas or theory about why they have it. I wonder what kind of ideas you have had?

3. Which one of the following do you think may have caused your heart attack? (The causal attribution checklist is handed to the patient for them to choose from).

MIGHT HAVE YES

No._____ No._____

4. Is there anything else that you would like to add to this list that you think might have caused your heart attack?

Yes No

If Yes, what?_____
_____
_____

5. Now lets look at the causes you have said yes to and pick out the ones you think are the most important. Please, pick out the 3 most important causes of your heart attack. Order them, the one you think is the most important first, the second most important next and so on.

1._____
2._____
3._____

6. Do you think these things have gone together to cause your illness or do you think that one has led to another, that one cause may have caused another?
_____
_____
_____

1. Myself
2. Other people
3. Stress
4. Worry
5. Eating fatty foods
6. Type of work that I do/did
7. Overwork
8. Working too hard
9. High levels of cholesterol
10. It is in my family
11. Stress at work
12. Smoking
13. Being overweight
14. By chance
15. Fate
16. High blood pressure
17. Poor diet
18. Environmental factors
19. Nerves
20. Arguing with people
21. Over exertion or sudden exercise
22. Lack of exercise
23. Driving or being caught up in heavy traffic
24. Depression
25. Drinking excessive amounts of alcohol
26. By the way other people treat me
27. Listening to other people's problems
28. Punishment for doing wrong
29. Payment for sins
30. Bad luck
31. The kind of person I am
32. Will of God
33. Problems with my children
34. Problems with my spouse

HAD

Health care professionals are aware that emotions play an important part in most illnesses. If they know about those feelings they will be able to help you more. The following questions are designed to help them to know how you feel. We would like to start by asking you to think about how you are feeling now and ask you to answer the following questions with that in mind.

I feel tense or "wound up":

- Most of the time.....
- A lot of the time.....
- Time to time, occasionally....
- Not at all.....

I feel as if I am slowed down:

- Nearly all the time.....
- Very often.....
- Sometimes.....
- Not at all.....

I still enjoy the things I used to enjoy:

- Definitely as much.....
- Not quite so much.....
- Only a little.....
- Hardly at all.....

I get a sort of frightened feeling like "butterflies" in the stomach:

- Not at all.....
- Occasionally.....
- Quite often.....
- Very often.....

I get a sort of frightened feeling as if something awful is about to happen:

- Very definitely and quite badly.
- A lot of the time.....
- Time to time, occasionally...
- Not at all.....

I have lost interest in my appearance:

- Definitely.....
- Very often.....
- Sometimes.....
- Not at all.....

I can laugh and see the funny side of things:

- As much as I always could.....
- Not quite so much now.....
- Definitely not so much now....
- Not at all.....

I feel restless as if I have to be on the move:

- Very much indeed.....
- Quite a lot.....
- Not very much.....
- Not at all.....

Worrying thoughts go through my mind:

- A great deal of the time....
- A lot of the time..... .....
- From time to time but not too often.....
- Only occasionally.....

I look forward with enjoyment to things:

- As much as I ever did.....
- Rather less than I used to.
- Definitely less than I used to.....
- Hardly at all.....

I feel cheerful:

- Not at all.....
- Not often.....
- Sometimes.....
- Most of the time.....

I get sudden feelings of panic:

- Very often indeed.....
- Quite often.....
- Not very often.....
- Not at all.....

I can sit at ease and feel relaxed:

- Definitely.....
- Usually.....
- Not often.....
- Not at all.....

I can enjoy a good book or TV programme:

- Often.....
- Sometimes.....
- Not often .....
- Very seldom.....

APPENDIX V

Data Coding Instructions

Data Coding Instructions For Checklist Causal Attributions.

Could you please help me with the following. I am trying to categorise the items appearing on the next page. These items are causal attributions and each one needs to be put into one category.

The categorise are as follows:

Behavioural self blame: refers to when self-blame focuses on ones own behaviour. Individuals can blame themselves for having engaged in (or having failed to engage in) a particular activity, thereby attributing blame to past behaviours = behavioural self blame (Janoff-Bulman,1979).

Characterological self blame: refers to when self-blame focuses on ones character, an overall view of the kind of people individuals perceive themselves to be. Individuals can blame themselves for the kind of people they are, thereby faulting their character = characterological self blame (Janoff-Bulman,1979).

Other-blame: refers to when other people are blamed for the situation/event.

Circumstances: refers to when the focus is on circumstances or the environment.

Biology: this category refers to when causes are focused on the individuals biology.

Chance: chance or fate are the focus of attributions.

God: God or religious beliefs are the focus of the attribution.

Please, put the number of the items on the line so that each item belongs to one category and *only* one.

Behavioural self
blame:_____

Characterological self
blame:_____

Other blame:_____

Circumstances:_____

Biology:_____

Chance:_____

God:_____

Data Coding Instructions For Spontaneous and Provoked Attributions.

What is a causal attributional (CA) statement?

"A statement that explains or explores the reasons or causes for a particular event or class of events, where event refers to a reported outcome or behaviour or situation."

Task.

1. Please, indicate whether you think the patient has made a causal attributional statement by following the definition for a causal statement given above. Use the table below to list your answer.

2. If a CA is made, is it one of the ones mentioned on the 34 item list?

3. If the causal attribution is not on the list, please write what it is and if the patient said "Don't know" write that down.

4. Which of the 7 categories does it belong to?

5. Does the patient say "Why me"=1, "Why did it happen"=2 or both = 3.

Subject no. /Study no.	Why me/ Why did it happen	CA is made 1=no 2=yes	CA number as on the list from 1 to 34	Category no. 1-7	If CA is not on the list state below what the CA is also state here if "D/K".

Subject no. /Study no.	Why me/ Why did it happen	CA is made 1=no 2=yes	CA number as on the list from 1 to 34	Category no. 1-7	If CA is not on the list state below what the CA is also state here if "D/K".

34 ITEM CAUSAL ATTRIBUTION LIST.

1. *Myself*
2. *Other people*
3. *Stress*
4. *Worry*
5. *Eating fatty foods*
6. *Type of work that I do/did*
7. *Overwork*
8. *Working too hard*
9. *High levels of cholesterol*
10. *It is in the family*
11. *Stress at work*
12. *Smoking*
13. *Being overweight*
14. *By chance*
15. *Fate*
16. *High BP*
17. *Poor diet*
18. *Environmental factors*
19. *Nerves*
20. *Arguing with people*
21. *Over exertion/sudden exercise*
22. *Lack of exercise*
23. *Being caught up in heavy traffic*
24. *Depression*
25. *Drinking excessive amounts of alcohol*
26. *By the way other people treat me*
27. *Listening to other peoples problems*
28. *Punishment for doing wrong*
29. *Payment for sins*
30. *Bad luck*
31. *The kind of person I am*
32. *Will of God*
33. *Problems with my children*
34. *Problems with my spouse*

CAUSAL ATTRIBUTION CATEGORIES

1. Behavioural self blame:	***Blaming ones own behaviour for the event.***
2. Characterological self blame:	***Blaming ones own character or personality for the event.***
3. Other blame:	***Blaming other persons for the event.***
4. Circumstances:	***Attributing to circumstances or the environment.***
5. Biology:	***Causes are focused on the individuals biology.***
6. Chance:	***Attributing to chance or fate.***
7. God:	***Attributing to God or religious beliefs.***